DOCUMENT RESUME

ED 116 880 RC 008 952

AUTHOR	Laosa, Luis M.; And Others
TITLE	An Evaluation of Non-Formal Education in Ecuador. Volume 2: Overview and Evaluation Plan. Final Report.
INSTITUTION	California Univ., Los Angeles. Center for the Study of Evaluation.
SPONS AGENCY	Agency for International Development (Dept. of State), Washington, D.C.
REPORT NO	AID/ta-C-1124
PUB DATE	31 Jul 75
NOTE	98p.; For related documents, see RC 008 953 and 954
EDRS PRICE	MF-$0.76 HC-$4.43 Plus Postage
DESCRIPTORS	Attitudes; Change Agents; Control Groups; Educational Games; Educational Objectives; *Evaluation Methods; Experimental Groups; *Instructional Materials; Literacy; Mathematical Concepts; Measurement Instruments; *Nonformal Education; Personnel Selection; *Program Evaluation; Quality Control; *Rural Areas
IDENTIFIERS	*Ecuador; University California Intervention Study; University Massachusetts Impact Study; University of Massachusetts

ABSTRACT

As the second volume in a 4-volume evaluation report on the University of Massachusetts Non-Formal Education Project (UMass NFEP) in rural Ecuador, this volume details the evaluation design. Cited as basic to the evaluation design are questions which ask: (1) What kinds of effects (changes) can be observed? and (2) What are characteristics of the materials and procedures as they can be logically and/or empirically related to the desirable outcomes? Cited as major components of the design are: (1) The experimental field implementation and concurrent evaluation of the UMass NFEP education games that were among the most widely used/accepted education games; and (2) The UMass non-formal education intervention impact study (an impact profile, a qualitative analysis of intervention based on observations and interviews, and individual testing of game session participants). Additionally, this report describes: (1) Materials Selected for University of California at Los Angeles Field Implementation and Evaluation; (2) Instruments (a set of individually administered tests given in a pre-second-post basis to measure literacy, numerical skills, and critical consciousness or attitudes); (3) Staffing (selection criteria, training, and procedures); (4) Implementation Procedures (selection of communities and control and experimental groups); (5) Criteria for Field Supervision and Quality Control. (JC)

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ED116880

AN EVALUATION OF NON-FORMAL EDUCATION IN ECUADOR

VOLUME II: OVERVIEW AND EVALUATION PLAN

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The authors wish to acknowledge the collaboration and administrative coordination provided by Srta. Pilar Núñez, and the technical assistance provided by Srta. Piedad Figueroa and Sr. Anibal Villacis.

RC008952

Final Report AID/ta-C-1124
July 31, 1975

ACKNOWLEDGEMENTS

A project of the magnitude of the present one could not have been accomplished without the assistance and cooperation of a multiplicity of individuals and agencies.

The authors are grateful to the following individuals who served as evaluation field workers or animadores, throughout the field phase of the evaluation:

Nancy Lluguín	Julia Barba
Jorge Proaño	Marcelo Unda
Kléber Ruiz	Jorge Freire

Other individuals served as animadores for limited periods of time.

We wish to thank Myron Vent and Bernie Wilder of AID Washington and Jon Gant and Jim Frits of AID Mission Ecuador. We are grateful to the Ecuadorian Ministry of Education and to the University of Massachusetts Non-Formal Education Project personnel for their cooperation in the conduct of this evaluation. Special thanks are due Patricio Barriga for sharing with the project staff his valuable insights regarding the non-formal education project. We are grateful, too, to James Hoxeng for consultative assistance during the planning stages of the evaluation design. We wish to thank Jack Krakower for his expedient and able assistance in data analyses.

We are thankful to Patricia Goetschel, Beatrice Kass, and Denise Minden, project secretaries.

And muchas gracias to the hundreds of rural villagers and other individuals throughout Ecuador whose interest, cooperation and hospitality made this evaluation study the profoundly human experience it has been.

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CHAPTER I

OVERVIEW

INTRODUCTION

This document represents the final report of the evaluation of the Ecuador Non-Formal Education Project. This evaluation was conducted under Contract No. AID/ta - C-1124 with the U. S. Agency for International Development.

The Ecuador Non-Formal Education Project began in the spring of 1971 when a team from the University of Massachusetts (UMass) visited and studied nearly thirty different programs in Ecuador which were engaged in non-school educational activities. The goals of the study were to identify on-going projects, to assess the potential of existing institutions to make use of non-school educational techniques, and to assess the willingness of these institutions to try out new procedures. The study confirmed that there were a substantial number of institutions either involved in non-school educational activities or interested in becoming involved.

In the summer of 1971, a contract was signed between the U. S. Agency for International Development, the Center for International Education at the University of Massachusetts, and the Government of Ecuador. Emphasis during the first year of the contract, which began in January 1972, was on the development of new techniques. During subsequent periods the emphasis was to shift to discovering ways for efficient distribution and use of the new approaches (Evans and Hoxeng, 1973).

The individuals and institutions undertaking the Ecuador Non-Formal Education Project shared a common concern that a critical lack of human and economic resources existed to bring educational facilities to rural

areas where some kind of educational enhancement appeared needed. They saw that educational facilities in Ecuador were inadequate in reaching the full populace and that the materials utilized lacked relevance to rural people (Swanson, 1973).

In the summer of 1974, the present evaluation study reported herein, was commissioned by the United States State Department's Agency for International Development.

OBJECTIVES OF THE EVALUATION

As stipulated in the Statement of Work of the General Provisions of the Contract, the objective of this contract was to evaluate the non-formal education project in Ecuador and to determine its replicability in other regions of the world. The primary focus of this evaluation is "on the factors in the instructional materials that seem reasonably related to intended and desired consequences in participants as individuals and social groups."

The general questions that this evaluation attempts to answer, in response to contract stipulations, are as follows:

1. What kinds of effects (changes) can be observed; and

2. What are the characteristics of the materials and procedures as they can be logically and/or empirically related to the desirable outcomes.

A principal step in the development of the evaluation design was to articulate the general questions stipulated in the contract into more specific questions in order to assure that the data collected through the evaluation design would provide information optimally useful for decision-makers.

After a series of interviews and written communications with AID officials in both the Washington Office and the Mission Office in Quito and with University of Massachusetts Non-Formal Education Project personnel, both in Amherst and in Quito, the following major questions were chosen as those whose answer would provide the information needed by decision-makers at the various levels (U. S. AID Washington, U. S. AID Mission to Ecuador, Ecuadorian Ministry of Education):

1. What does the University of Massachusetts non-formal education purport to do?

2. How does the UMass non-formal education project go about implementing its goals and objectives?

3. To what extent is the UMass non-formal education project carrying out its intended objectives effectively?

4. What are the learning outcomes of selected educational materials developed by the UMass non-formal education project?

5. What are the characteristics of the more and the least effective materials developed by the UMass non-formal education project?

6. What are the characteristics of materials that work well with learners of what characteristics? What are the best matchings?

7. What facilitator/teacher variables affect the relative effectiveness of various materials?

8. What are the motivational attributes of each of the educational games selected for in-depth experimental analysis in the evaluation?

9. What changes in attitudes and behaviors are produced by each of the educational games on a short-term basis?

10. What sequencing factors or prerequisites are important for the non-formal education games?

11. What are the effects of replay frequency for each of the selected non-formal education games?

12. What is needed to develop effective non-formal education materials and programs in countries similar to Ecuador?

13. Can the project be replicated in other countries? If so, what conditions are most necessary to ensure success?

CHAPTER II

THE EVALUATION PLAN

The evaluation design was devised in such a fashion as to obtain information that would answer as objectively as possible the 13 questions previously specified. As such, the evaluation design has two components.

1. The experimental field implementation and concurrent evaluation of the UMass non-formal education games that are among the most widely used or most widely accepted education games (the UCLA intervention study).

2. The UMass non-formal education intervention impact study.

The general designs of the two major components of the evaluation are described in the following sections.

The shaded areas in the map of Ecuador are the three provinces -- Tungurahua, Chimborazo, and Guayas -- in which the 31 rural communities in the evaluation sample were located. As can be seen, a very large geographical area was encompassed by the evaluation described herein.

Galapagos Islands
Pacific Ocean
Colombia
Esmeraldas
Carchi
Imbabura
Pichincha
Quito
Pacific Ocean
Napo
Manabi
Cotopaxi
Tungurahua
Los Rios
Bolivar
Chimborazo
Pastaza
Guayas
Peru
Canar
Morona-Santiago
Gulf of Guayaquil
Azuay
El Oro
Loja
Zamora-Chinchipe
Peru
Ecuador
International boundary
Provincia boundary
National capital
Provincia capital
Railroad
Road
Airfield
Major port
Populated places

THE UCLA INTERVENTION STUDY

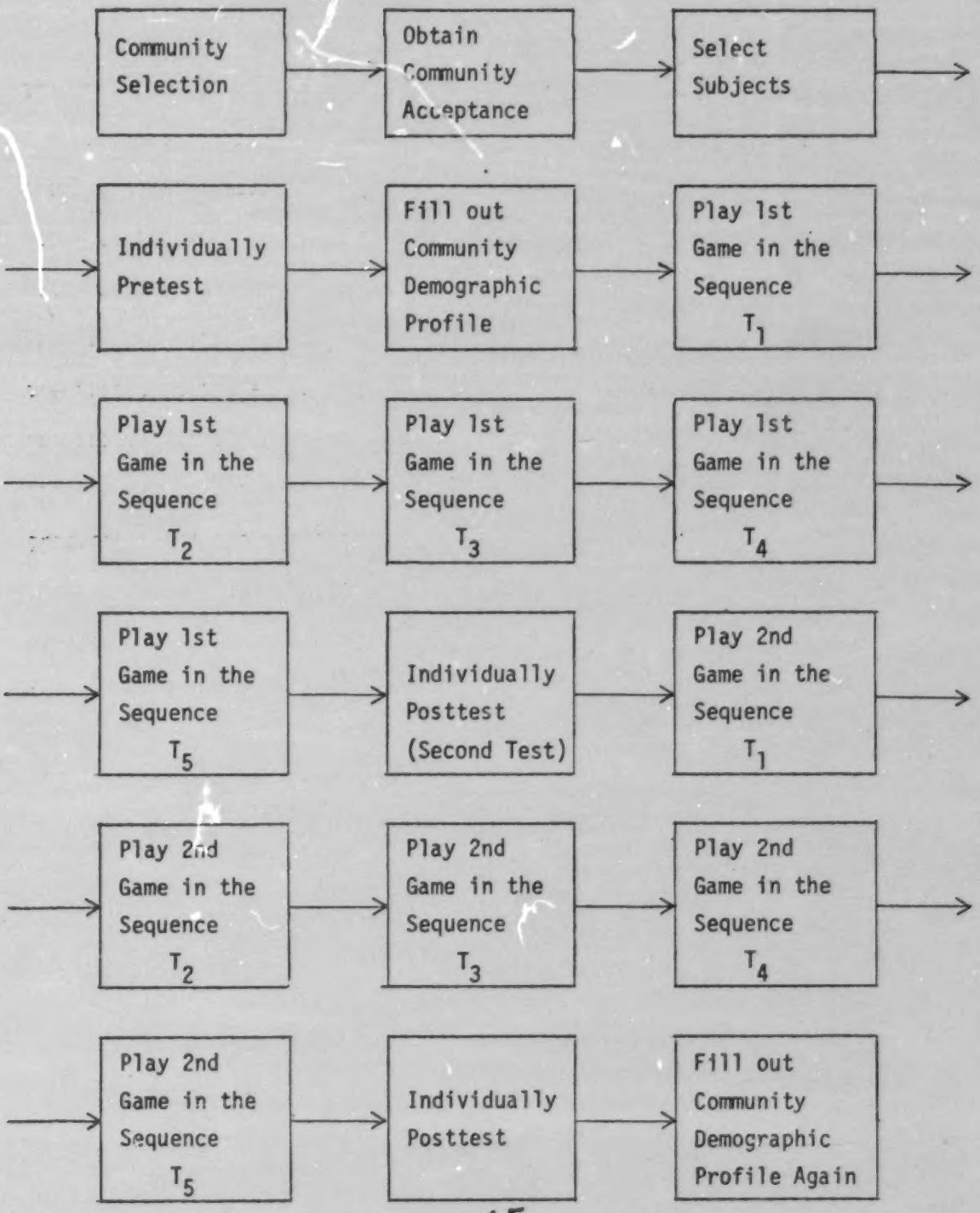
This portion of the evaluation design was developed and implemented in order to provide information toward answering the evaluation questions 4 through 13 described in the previous chapter.

In order to provide accurate data concerning the above evaluation questions, it was necessary to observe and measure in a controlled manner, from its inception, the introduction and implementation of selected educational materials following various sequences of introduction, in populations of various characteristics, and by leaders of various characteristics. Given the fact that the evaluation was not requested until after the UMass project had passed its development, introduction, and implementation phases, and since several of the evaluation questions call for planned variations in introduction and implementation of selected materials, it was necessary to provide in the evaluation design an experimental field implementation of the selected materials to be carried out by the evaluators considering the conditions previously mentioned.

Concomitant with this planned introduction and implementation of the selected non-formal education games, the objectives of each game, as well as possible unintended effects, were measured in a pre-post fashion. The variations in the introduction and implementation of the games, the characteristics of the leaders introducing the games, and the characteristics of the individual participants and of the respective communities, were carefully and systematically documented and measured.

The procedures followed for the experimental field phase of the evaluation for each community may be depicted in a flow chart as follows. The

flow chart is to be read from left to right, indicating the chronological sequence of events.


Community Selection
Obtain Community Acceptance
Select Subjects
Individually Pretest
Fill out Community Demographic Profile
Play 1st Game in the Sequence T_1
Play 1st Game in the Sequence T_2
Play 1st Game in the Sequence T_3
Play 1st Game in the Sequence T_4
Play 1st Game in the Sequence T_5
Individually Posttest (Second Test)
Play 2nd Game in the Sequence T_1
Play 2nd Game in the Sequence T_2
Play 2nd Game in the Sequence T_3
Play 2nd Game in the Sequence T_4
Play 2nd Game in the Sequence T_5
Individually Posttest
Fill out Community Demographic Profile Again

The examination of the sequences depicted in the preceding flow chart indicates a number of activities, each of which is more fully described in later sections of this chapter, but for overview purposes we will discuss the flow chart briefly. The first activity engaged in was the community selection. Recognizing differences between regions, communities were selected in both the Coast and Sierra regions and in a manner that provided us with communities similar to those utilized in the original UMass interventions.

After communities had been selected, field workers visited the communities to obtain acceptance, a process involving a considerable amount of effort. Individuals were selected to be participants in the intervention study. Simultaneously, other communities were selected as control communities with some of their residents individually tested. In both cases, participants were given individual pretests consisting of demographic data, literacy skills, numeracy skills, and critical consciousness. In addition, evaluation field workers completed an extensive community demographic profile. Following the completion of all of these "pretest" instruments, the first game introduced into the community was played in sequence five times with intervals of at least one week between playings. A second round of individual testing, including all of the individual tests previously described, was administered after the first game sequence. A second game, played in sequence five times was also followed by individual testing. Also at the end of the total intervention, a community demographic profile was again completed.

UMASS IMPACT STUDY

The portion of the evaluation designed to assess the relative impact of the UMass project in eight selected rural communities had three components:

1) a detailed "impact profile" for each community, which would gather quantitative information on the processes and materials used by the UMass project in their intervention in the communities.
2) a qualitative analysis of UMass intervention, based on personal observations and detailed interviews with facilitators, game session participants and community residents. Here the focus was on the UMass project intervention as seen by the people involved, and its effect (if any) on them personally and on the community as a whole.
3) individual testing of game session participants. Between 6 and 10 people in six of the eight communities studied were given the same individual test measurement that was applied in the UCLA experimental and control communities. In two of the communities the games had been played so few times (between 3 and 4) and with so few people that no individuals could be found of whom it could be said that there had been a personal impact.

Our objective with this study was to identify and analyze those processes--introduction to a community, selection and training of group discussion leaders, participant characteristics, follow-up and support--on which much of the success of a non-formal educational project depends.

We selected eight communities, four in the highlands and four on the coast in which the UMass project personnel and trained facilitators had used at least some of the educational games. The four highland communities - Puñachísac, Tutupala, San Martín, Baldalupaxí - were selected on the basis of their "success" as determined by UMass non-formal education (NFE) project documents and reports, and by conversations with UMass project personnel. The four coastal communities we studied, were also selected on the basis of their "success."

The "impact profile" allowed us to measure and then compare with the other villages in the study the degree and intensity of UMass NFE intervention in each. This information was used as a backdrop to the in-depth observational and interview data; together they would answer evaluation question #3 concerning the effectiveness of the implementation of UMass project objectives.

People in six of the communities who had participated in the game sessions there were then given the individual pretest applied in the UCLA experimental and "control" communities. Their scores would be compared with the "control" communities in a "post" comparison on the assumption that they were a comparable selection and mix of people as in other rural villages in Ecuador represented by the control communities. In addition, they were each interviewed about their personal perceptions of the non-formal materials and their utility in daily life.

The impact study attempts to analyze the UMass project as a multi-level interaction process: at one level are the concepts, plans and documents that spell out intent and procedures. The next level is that of immediate

Communities Selected for the UMass Impact Study and Number of Participants Administered the Individual Tests

Community	Number of Participants Tested
Sierra	
Puñachísac	8
Tutupala	8
San Martín	8
Baldalupaxí	0
Coast	
Colonche	8
San Pedro	8
Sinchal	6
Valdivia	0

project impact: implementation of the plans and goals through the training of the community facilitators in the use of project materials and project ideas. Finally, the project as it is interpreted by the facilitators which is then passed on to individuals in each of the rural communities who, in turn, process that information and reach their own highly personal conclusions. The impact we study in this particular component of the evaluation is not merely that of certain materials on certain kinds of people, but rather of the whole series of interacting ideas, personalities and processes that determine the effectiveness of a non-formal education project in rural areas.

MATERIALS SELECTED FOR UCLA FIELD IMPLEMENTATION AND EVALUATION

The evaluation questions which address the component of the evaluation design described in this section of the report refer to "educational materials selected for in-depth experimental analysis." As has already been pointed out, in order to answer the evaluation questions, the evaluators had to actually introduce and implement--in addition to measure the effects and document the process--selected non-formal educational materials as treatments. This was necessary in order to evaluate the materials in the manner suggested by the evaluation questions. The following non-formal education games were selected for planned sequential field implementation and concomitant evaluation:

a) Hacienda (Game of Life), Sierra Version

b) Hacienda (Game of Life), Coast Version

c) Number Bingo (addition and multiplication)

d) Syllable Dice

e) Syllable Cards

The criteria for selecting these particular games for field implementation and evaluation were: (a) that the games be among the most popular and widely used of all the materials developed by the UMass project; (b) that as a group they be representative of the major areas of learning on which the UMass project focused (Critical Consciousness, Literacy, and Numerical Skills).

Description

A description of each of the non-formal education materials selected for the field implementation and evaluation is presented below.

Hacienda (Juego de la Vida)

"Hacienda," often called "The Game of Life," is a simulation board game based on the popular Monopoly. But rather than streets, hotels, and utilities, Hacienda revolves around rural South American reality; people buy and sell the typical agricultural products (those of the highlands in the original version, and tropical products in the coastal version), deal with local authorities (priest, political chief, lawyer) and experience the frustrations of a peasant's daily life.

The object of the game is to get the peasant players to improve life by taking advantage of the opportunities available: information, organization, cooperation. Designed to simulate real life in order for the campesino to "back off" a moment to see his own situation objectively, a key component of the game is the discussion which follows play; the game activity and the reflection on it are designed to lead to a state of "critical consciousness" ("concientización" in Spanish).

"Critical consciousness" is a concept based largely on the writings by and about Paulo Freire and the literacy method he developed in the late 1960's. It refers to the ability to objectively describe one's own situation, to analyze it in terms of one's goals, and to plan concrete steps to reach those goals. It represents an initial step toward overcoming "oppression." It deals with the relationship between one's perception of a situation and the objective situation itself.

Hacienda is described in detail in Hacienda Technical Note #3 by J. Hoxeng, 1973. A synthesis of Freire's theory and methodology can be found in Concientizacao and Simulation/Games (Smith, 1973).

Syllable Dice

This set of between eleven and fifteen small wooden blocks is what the UMass project calls a "fluency" game--one designed to develop or increase a specific literacy or numeracy skill in the individual who uses it. Each block has a single letter or a syllable on each side (the original version used only letters; field experience and suggestions from the Director of the Ministry of Education's Adult Education division led to the use of syllables since Spanish is a highly regular, syllabic language).

The game is easy to play, and lends itself to any number of variations. Playing individually or in groups, the dice are tossed and words are then formed combining those syllables and letters which fall face up. The specific skill which it aims to develop is the correct identification of letters and their formation into correctly spelled words. It does not lend itself as easily as Hacienda to the process leading to "critical consciousness," but does allow for discussions of daily life situations based on the words that are formed. To the extent possible, the game (the selection and various combination of syllables) was designed to turn up words that are common in rural Ecuador.

A full explanation of the development and design of this game can be found in Letter Dice Technical Note #6 by J. Hoxeng and A. Borja, 1973.

Syllable Cards

Another "fluency" game, Syllable Cards closely resembles its predecessor, Syllable Dice. It is a deck of some 80 cards, roughly the same size and consistency of regular playing cards; each has a syllable or single letter printed on one side.

Its aim is to increase the players' ability to quickly identify letters and sounds, and to form them into words. Dealt out to the participants, each tries to form as many different words as possible. The cards are versatile, and allow the players to invent a number of variations on this way of playing; "rummy" is a name attached for convenience, since it is a common game in rural Ecuador and in no way limits the cards' use. (In Spanish, the game is usually referred to a "Naipes de Sílabas," or "Syllable Cards.")

The game also has a certain potential as a discussion tool; the words that are formed (the syllables having been chosen by the UMass project to facilitate the formation of words common to rural Ecuadorians) are focused upon as representatives of a larger reality, and these ideas are then discussed as they touch upon daily life.

Number Bingo

Number Bingo is a "fluency" game designed to increase functional arithmetical skills. Closely resembling the familiar bingo used in the United States, it is a series of cardboard playing boards, each divided into squares, and each square containing a number. A "reader" calls out math problems to the participating group, and the player then tries to locate the answer to the problem on his board. There are both addition and multiplication ver-

sions of the game, and both were used by the evaluation.

The Bingo game is designed to be used with learners of different levels of knowledge. The cards containing the computational problems to be read out also have the answer printed on the reverse; with people unfamiliar with numbers, the computational problems can be called out or shown, the participant having only to identify the numbers on his or her board. For the more advanced student, speed becomes the object since this is an important skill in the rural market places.

As with the other "fluency" games, UMass project bingo can be used as a discussion-starter, beginning with the utility of numerical skills in rural life and moving on to one's situation vis-a-vis the market.

A detailed discussion of this game can be found in Number Bingo: Technical Note #7 (Gunther, 1973).

Game Sequences

In some of the communities we selected for our implementation and evaluation of the non-formal education games, we introduced the games, two per community. In other of the communities in the sample, we introduced and evaluated only one game. In instances where two games were introduced the following sequences were used:

Sequence Code	Game Sequence
A.	Hacienda (Game of Life) - Number Bingo
B.	Hacienda (Game of Life) - Syllable Cards
C.	Hacienda (Game of Life) - Syllable Dice
D.	Syllable Cards - Syllable Dice

The number of games in a sequence and the number of two-games combinations included in this portion of the design had to be limited to the above four different sequences, given the temporal and financial constraints inherent in the present contract. These four different sequences, however, are considered to be adequate for providing information relevant to the evaluation questions.

Table 1 presents the communities selected by the present evaluators for introducing, implementing, and evaluating the non-formal education materials, and the material or material sequence employed in each community. Communities were assigned randomly to games and game sequences.

As shown in Table 1, there were a total of 23 rural communities selected by the evaluation staff. Of these 16 were in the Sierra, or mountain region, and 7 in the Costa, or coastal region, of Ecuador.

It should be noted that Ecuador is geographically and culturally divided into three distinct regions: the Sierra, the Costa, and the Oriente, or Amazon jungle region. The UMass non-formal education project has operated in two of these regions: Sierra and Costa. The people from these two areas vary widely with regard to their culture, life style, dialect spoken, etc.

In 11 of the 23 communities, two non-formal education materials were introduced and completed (in 5 different sequences); in 11 communities a single material was introduced. In the latter group, the game sequence was completed in 4 of the 11 communities. In one community, Jiménez, the evaluation project completed only the "pretest" instruments; the participant group then decided the community didn't need an adult education program after all.

Table II.1

Communities Selected by the Evaluators for Introducing, Implementing, and Evaluating the Non-Formal Education Materials, and the Material or Materials Sequence Employed in Each Community

Community	Number Bingo	Hacienda	Syllable Dice	Syllable Cards
Sierra				
Rumipamba	2	1		
Hipolongo		1	2	
Yayuligui			2	1
San Antonio	1	2		
San Andrés		1		
San Pedro			1	
San Francisco			1	
Urbina		1		
El Calvario		1		2
Asunción	2	1		
La Libertad	1			
San Isidro			1	
Pilchipamba			2	1
Miraflores	1			2
Chilco La Esperanza				1
Jiménez (no number)				
Coast				
Olón		1		
Palmar		1		
San Pablo			2	1
Barcelona	2	1		
Montañita	1			
Dos Mangas		1	2	
Cadeate			1	

Note: A "1" and "2" indicate whether the non-formal education materials was first or second in the sequence.

Table II.2

Number of Persons Administered the Pretest in Each UCLA Experimental Community

Community	Number of Participants
Tungurahua Province	
San Pedro	13
San Andrés	15
Urbina	17
Rumipamba	20
Hipolongo	20
Yayuligui	23
San Antonio	16
San Francisco	17
El Calvario	25
Chilco La Esperanza	21
Chimborazo Province	
Asunción	18
La Libertad	15
San Isidro	16
Miraflores	18
Jiménez	10*
Pilchipamba	22
Guayas Province	
Olón	15
Palmar	17
San Pablo	17
Montañita	15
Cadeate	15
Barcelona	27
Total	427 participants

* intervention discontinued

INSTRUMENTS

There were two basic instruments used in the performance of this component of the evaluation. The first is a community demographic profile. This instrument, administered in each community in which the non-formal education games were introduced by the evaluation staff, obtains detailed data on the demographic, social, political, economic, racial, linguistic, religious, and other relevant characteristics of the community.

The second is a set of individually administered tests given in a pre-second-post basis to each subject participating in the experimental portion of the evaluation. The intervening treatment was the non-formal education game led by the evaluation field worker five times in that community. The second test administration occurred following the use (5 times) of the first game and the third test was administered after the second game was played 5 times. These individually administered tests cover the following areas which are directly related to the objectives of the five non-formal education games.

1. Literacy
2. Numerical Skills
3. Critical Consciousness (Attitudes)

In addition, data were collected from each participant to obtain individual characteristics. This individual demographic questionnaire was administered on a pre- and post-basis. Furthermore, extensive work diaries were maintained by all field staff to provide in-depth and systematic qualitative data on all field implementations. Additional instruments were devised for use in the UMass impact study.

The Community Demographic Profile

This instrument was designed to identify and measure numerous factors --ethnicity, economic base, internal organization, external contacts and influence--that would have a bearing on the development of an extracurricular adult education program in selected rural communities. It was applied once in each village in which UCLA attempted to introduce the non-formal education games, and again a second time in those communities where a second game was played five times. The same instrument was applied once in eight selected communities identified as "impacted" by the University of Massachusetts project.

The profile is six pages long, with close to sixty items (see Appendix A). The information it seeks is straightforward, and can be obtained by individual observation on the part of the field worker and interviews with local authorities. It was designed with the assistance of Ecuadorian technical consultants, then reviewed item by item with the field workers to identify possible areas of misunderstanding or misinterpretation. Emphasis on the training of the field workers was placed on the need for accurate, reliable information; certain quantitative data (e.g., number of radios in the community, population, number of illiterates) would have to be based on interviews with various contacts in the community and, where possible, verified with available official data such as the census.

The experience of field testing the instruments revealed a variety of interpretations of certain items and the necessity of constantly assessing and considering the reliability of each data source utilized. An examination of several selected items will provide a fuller understanding of procedures.

Item 6. Ethnicity of community.

This was to be judged by the field worker, based on forms of dress and local customs. The entire community was to be considered, and not just that segment participating in the UCLA program. Questions on this point could be directed to local leaders, but their personal bias could limit the reliability of their answers; they were used more commonly as "checks" on the worker's observations.

Items 8 and 9. Number of inhabitants and houses.

To be determined by interviews with local authorities--teniente político, priest, teacher, community leaders, with a reasonable approximation to be made where differences appeared. In some cases exact data from the recently completed national census were used. There was no confusion as to the population of this or that community, nor as to what constituted a house.

Items 10 and 11. People over six years of age who can read and write; number of illiterates.

Determined by interviews with local leaders, especially the schoolteacher, after careful explanation of what was considered to be literacy: ability to read and write one's name and perhaps simple sentences. Responses varied widely, from "I have no idea" to "everyone can read and write." Resonable estimations were made based on the interviews and personal observations.

Item 12. Services in the community.

d. number of students enrolled in the school(s).

Determined by interviews with the teacher or the president of the Padres de Familia. Sometimes neither were sure, and a close estimation would be accepted.

f. car-worthy roads

Roads on which cars could and did travel, used for communicating with other communities or towns.

g. non-carworthy roads.

Exceedingly difficult to determine with exactitude because of the multiplicity of narrow trails, small roads, and footpaths that criss-cross a community and sometimes a whole area. Included in the final figure were those that were used to communicate internally and externally between groups of houses or areas or neighboring communities. Paths leading to individual's houses were discounted.

k. public health.

Did not have to be a physical location; weekly or even monthly visits by a doctor or nurse were counted as a single service, as long as it was on a regular basis.

Item 13. Private businesses.

Determined by interviews and observation. They could be individually-housed businesses (such as a store or bar), form part of a home, or merely be an occasional household activity (such as shoemaking or carpentry) as long as it occupied an identifiable area within the house and served the community in some way.

Item 14. Projects underway.

These had to be projects that had taken on an organizational or physical form (i.e., constituted committee, foundations laid, money raised, etc.) and were in operation at the time of UCLA intervention. Plans, ideas, and projections for the future were noted but not counted.

Item 16. Relations between religions.

Determined by observations and informal conversations. In most cases the community would be homogeneous--entirely Catholic--and the relations (in reality non-existent) would be indicated as harmonious.

Item 17. Organizations within the community.

Those that were in existence and functioning in some manner at the time of UCLA intervention. An organized unit would be counted--sports clubs for example--but not groups of people that get together irregularly for fleeting purposes.

Item 18. External organizations in the community.

Counted were all the organizations (except UCLA) external to the community that were currently active in some way there; their presence did not have to be permanent (such as the Ministry of Education) but it did have to be regular (e.g., periodic visits by a medical team, sponsored by the Ministry of Agriculture).

Item 21. Language used in community.

Determined by personal observation and informal conversations. Direct questions on the matter could draw evasive or false answers, and were only used as a "check" on the observations of the field worker.

Item 22. Number of radios in the community.

Determined by numerous individual interviews. No one could know for sure, nor was a "census" possible; a reasonable extrapolation from all responses was accepted.

Item 24. Years since the formation of the community.

In very few cases was it possible to determine this with any accuracy.

The largest figure obtained, gleaned from "oldest living memory" or "my grandfather had said..." would be accepted. The question refers to the formation of the community as an identifiable entity and not to its legal, chartered formation.

Item 24 (page 5). Types of newspapers available in the community.

This was interpreted as "number of different newspapers" rather than "type," since standard popular newspapers are the only kind available. To be counted, they would have to be sold in the community, even if only once a week, and not merely brought in by people who had bought them in neighboring towns or cities.

Item 25. Types of magazines read in the community.

Here there was not the need for them to be directly sold in the community, rather that they merely be available (i.e., brought in from outside, passed on from person to person). The emphasis was on type of magazine--news and political would be one, general interest and features another, "fotonovelas" a third, and comics yet another.

Item 26. Types of transportation used to leave the community.

Included were those means regularly available (even if only once a week) or commonly used, with the emphasis on "to leave the community," and not just for internal visiting or intracommunity transportation of products.

Page 6.

a. Number of times UMass games used with animador's (UCLA evaluation Ecuadorian field worker) presence.

Included are the five formal sessions with each game; noted elsewhere--in the diaries and sometimes as an aside on this same page--are the rare occasions when the animador was present, but not

in a directive role, when the game was played informally in the community.

b. Number of times UMass games used without animador's presence.

In most cases it was easy to determine exactly how many individual times the games had been used among the participants alone. In others, they had been taken home and used several times with different groups; in these communities, we took as our figure the highest number of times the games were played by any one individual outside the regular UCLA sessions.

Items a and b immediately above were completed at the end of each UCLA experimental intervention.

Criterion Referenced Testing

An important point must be made at this juncture about the nature of the tests constructed for measuring literacy and numerical skills. These tests were constructed as "criterion referenced" tests. Alkin (1974) has identified the following three definitions of "criterion-referenced tests" in the literature:

(1) "A criterion-referenced test is one that is deliberately constructed to yield measurements that are directly interpretable in terms of specified performance standards.... Performance standards are generally specified by defining a class or domain of tasks that should be performed by the individual" (Glaser & Nitko, 1971, p. 653).

(2) "A pure criterion-referenced test is one consisting of a sample of production tasks drawn from a well-defined population of performances, a sample that may be used to estimate the proportion of performances in that population at which the student can succeed" (Harris & Stewart, 1971).

(3) "Criterion-referenced measures are those which are used to ascertain an individual's status with respect to some criterion, i.e., a performance standard" (Popham & Husek, 1969, p. 2).

While these definitions differ considerably in terms of the limitations and constraints placed on a criterion-referenced measure, they all share a common emphasis on two characteristics. First, each definition emphasizes test organization (i.e., test item selection) based on specific tasks or behavioral objectives. Second, each definition emphasizes assessment in terms of predefined performance criteria. What is important to note about this discussion is that the project team was concerned with developing tests that determined the extent to which participants met an "absolute" standard (fulfilled the objectives) rather than a test that utilized a "relative" standard. That is, the critical question in our study is whether community participants attained the objectives specified as goals in the game materials.

Literacy and Numeracy Skills

The major objective of UMass non-formal "fluency" games is the transfer of literacy and numeracy skills to their users. Hacienda, though a "simulation" game with no stated cognitive objectives, includes many elements that involve the use of literacy and numeracy skills already possessed by the rural villagers. In order to measure the possible gain in these skills through game use, we identified the specific skill areas at which the four evaluated games aim and designed a criterion-referenced test based

on those skills. The objective of the "fluency" games are to develop first-grade to third-grade level operations of word formation and math problems (as reflected in the curriculum of the Ecuadorian primary school system). The objectives of the Hacienda game are somewhat higher (third-grade to fifth-grade level), related to the reading of simple sentences and more complex math problems, both oral and written.

The measurement of possible gains in literacy was divided into three sections: 1) identification of individual letters, 2) identification of individual syllables, and 3) identification of individual words and words formed into sentences.

The measurement of possible gains in math skills was divided into three sections: 1) identification of individual one-, two-, and three-digit numbers; 2) oral math operations (addition, subtraction, and multiplication); and 3) written math problems (covering addition, subtraction, multiplication, and division).

No one of the four evaluated games, nor any one of five game sequence combinations employed, touches upon all of the skill objectives. The same test was applied to all the evaluation participants, however, in order to be able to measure skill gains related to the specific game(s) being played in that community as well as measuring unexpected skill gains brought about by the various games.

Following the application of the tests in a few communities in the UCLA experimental sample, it was discovered that the non-formal education sessions had a strong attraction for individuals with several years of formal education. These individuals reached near-criterion level scores on the Literacy and Numerical Skills tests. Therefore, several items of

even higher difficulty but conforming to the objectives implicit in the materials were added to the Literacy and Numerical Skills tests, raising the possible criterion attainment level. In subsequent communities, this version with the higher ceiling in these two tests was used.

Six communities were administered Version 1 of the Literacy and Numerical Skills test, and nine communities were administered Version 2. For purposes of allowing comparison on test scores among communities receiving different versions of these two tests, Version 2 tests were scored in two different ways: (a) by counting only those items which were part of its Version 1 counterpart and (b) by counting all of the items in Version 2.

It is helpful here to differentiate between a test version--1 or 2--and a test scored according to Version 1 or Version 2 scoring system. Thus, on each test or subtest involving Literacy or Numerical Skills, individuals from communities receiving Version 2 of these tests have two separate scores: a Version 1 score and a Version 2 score--Version 2 scores having a higher criterion attainment level than its Version 1 counterpart. Of course, individuals from communities receiving Version 1 of the tests could only have Version 1 scores.

For the purpose of analyzing the data in order to answer the evaluation questions, the following scores were derived from each test:

1. Total Reading. This is a composite of four reading subscores: a) identification of individual letters out of fields of eight letters, b) identification of individual syllables out of fields of eight syllables, c) identification of individual words out of fields of four words per section, d) reading sentences of various lengths, with each word correctly read counting as a point.

In Version 1 of the instrument, this section would have a possible total of 30 points; Version 2 had a possible 61 points.

2. Total Functional Writing. "Functional" is defined as readable or understandable; if a word could be read phonetically and understood in its context, it would be counted as correct regardless of errors in spelling, punctuation, or capitalization. This section is the sum of three subscores: a) writing one's own name, first and last, b) writing individual words given the participant by the field worker (wherein each letter counts as a point), and c) writing sentences dictated slowly by the field worker (wherein each word counts as one possible point).

   Version 1 of the test had a possible score of 27; Version 2 had a possible 44 points.

3. Total Standard Writing. All the words written (except person's name) were then checked against standard Spanish; words had to be correctly spelled and capitalized, with proper accent marks, and clearly legible. Points were given for letters in the individual words and for each correct word in the dictated sentences.

   Version 1 of the test had a possible 26 points. Version 2 had 43 possible points.

4. Total Standard Literacy. This is the combined scores of Items 1 (Total Reading) and 3 (Total Standard Writing) above, plus the person's name. It is a reflection of the participant's ability to read and write correct, standard Spanish.

   Version 1 had a total possible point score of 58. Version 2 had 106 possible points.

5. Total Functional Literacy. A composite score of Items 1 (Total Reading)

and 2 (Total Functional Writing) above, this is a reflection of the individual's ability to read and write functional, legible Spanish without regard to grammatical errors.

Version 1 had 57 possible points. Version 2 had a possible 105 points.

6. Total Math. Included in this composite score are the subscores for: a) identification of individual one, two, and three-digit numbers in several multi-numeral fields; b) addition problems read to the participant and calculated mentally; c) subtraction problems read by the field worker and calculated mentally; d) multiplication problems read to the individual and calculated mentally; and e) math problems, including all four basic functions, done by the participant in a written form working alone.

   Version 1 had 32 possible points. Version 2 had 49 possible points.

7. Critical Consciousness. The twelve questions designed to measure the participant's perception of himself, others, and his community were given points according to the positive strength of each response. This score is the total point count for the twelve questions.

   Versions 1 and 2 contained the same questions and were given points in the same manner. Each individual could score a maximum of 28 points.

8. Draw-A-Man Harris-Goodenough Test. Designed to measure an individual's level of conceptual maturity through the use of a drawing exercise, the score is the sum of points given for identifiable features (eyes, nose, fingers, hair), details (hat, shoes), and other aspects of the drawing.

   It was applied in the same way in Versions 1 and 2. There are a possible 73 points total.

The tests used to measure the variables described in this section are presented in Appendix B.

Critical Consciousness

One of the major aims of the UMass project was to raise the level of "critical consciousness" of Ecuadorian peasants. The non-formal education game of Hacienda has as its specific aim the development of "critical consciousness" among those who use it (cf. Hoxeng and Evans, not dated). What is "critical consciousness?" "Critical consciousness" is a concept based largely on the writing by and about the Brazilian educator Paulo Freire (cf. Freire, 1970a; 1970b; Smith, not dated; Smith, Alschuler, Moreno, & Tasiguano, 1975). The concept of "critical consciousness" refers to the ability to objectively describe one's own situation, to analyze it in terms of one's goals, and to plan concrete steps to reach those goals.

A group of researchers in Ecuador and at the University of Massachusetts (Smith, Alschuler, Moreno & Tasiguano, 1975), have summarized and defined Freire's abstract concepts in order to allow investigators to translate these concepts into operational definitions. They identified four "conceptually distinct but interrelated indices of critical consciousness" (1) the capacity to see one's situation as problematic and susceptible to change, in contrast to viewing one's plight as static, fated by God, and unchangeable, (2) the keen awareness of social injustice--how the situation is not as it should be, or where there are inherent contradictions, (3) the relationship to the oppressor--the realization of how oppressed people play host to the oppressor, collude in maintaining the status quo through inaction and belief in the inherent "rightness" of the oppressor, and (4) critical collaborative action to transform the situations that put the oppressed and the oppressor into oppressive relationships.

Based on the above analysis of the concept of critical consciousness, a questionnaire was developed for purposes of measuring change in critical consciousness among individuals participating as subject in the evaluation. The questionnaire consists of a total of 12 items. These are presented in Appendix B.

Individual Demographic and Other Background Data

The individual tests each contain a section that measures a series of demographic and background factors, including years of schooling completed, attendance at adult night school, newspapers read per week; access to magazines, television, and movies; how often the radio is listened to; etc.

The demographic data--sex, age, occupation, marital state, number of children, ethnicity, religion, language--and the data on participation in community affairs were obtained in order to be able to compare the characteristics of our participant groups with the characteristics of the community at large. With this information, we would be able to answer evaluation question #6 concerning learner characteristics vis-a-vis each of the materials. It would shed light as well as on the broader question of the relative acceptance of non-formal education programs in the rural areas of Ecuador: what kind of person is attracted to them?

Application of the Individual Instruments

The instrument developed to measure literacy, numerical skills, and critical consciousness, and to obtain demographic and background data on each individual was composed of three sections: 1) demographic and other background data (age, sex, occupation, years of schooling, influence of outside media, participation in community affairs); 2) establishment of the individual's ability to perform letter and word identification, simple reading and writing, basic mathematical operations--to which the UMass non-formal materials were directed; 3) elicit the respondant's view of himself, his

community, and the outside world, and his ability to affect or change his environment, through a series of questions on those subjects.

It is a long questionnaire--27 pages in Version 2, with close to 100 items and/or tasks for each participant. It measures each skill in a precise manner. With the differences in each of the field workers (experience, skill at asking questions, personal traits) and those that would be presented by each participant in each community, plus the difference between communities and regions within Ecuador, it was of vital importance that the instrument be applied in the same way by all the workers and in all the communities if we were to obtain reliable, generalizable data.

Four days of the fifteen-day September training session were dedicated exclusively to a review and practice with the instrument. First, did the field workers understand each item? Would it be clear to a peasant? Suggestions were made and slight changes in wording were made. There followed an intensive application of the questionnaire between field workers, one acting as peasant and the other as interviewer. This was supervised by the coordinator and technical staff, with personal differences in style and wording, and potential areas of misunderstanding or lack of clarity noted and later reviewed, item by item, with the group. The same process was followed several times, until we were satisfied that the field staff was familiar and comfortable with the instrument and could deal with problems that might come up in its application.

The next step was the field testing. Carried out in a village some distance outside Quito, the staff worked in teams of two to evaluate each other's performance in making the personal contacts and in the use of the questionnaire. As expected, the direct experience brought out a series of

minor problems--difficulties in certain items, unexpected answers by participants, lack of clarity with some of the wording, questions of style. Upon returning to the office, another full day was spent reviewing the process once again, making slight alterations, and agreeing on a common application founded in reality as well as theory.

An item-by-item review of the instrument and its application follows:

Items 1-5. Identification of field worker, community and location.

Item 6. Name of person. The full name, with both last names in case of confusion or father-son pairs of participants.

Item 7. Age. Stated in years, to last birthday. If the participant was unsure, his or her estimate would be accepted.

Item 8. Sex of participant.

Item 9. Occupation. A list of nine possible occupations is given, with that of the participant to be the one that is his or her major source of income. If he has a secondary occupation, it is to be written to the side of the major occupation, but not marked as a response.

Item 10. Ethnicity. This was a judgment of the field worker, based on physical features, customs in the home (if observable) and clothing worn.

Item 11. Education. Stated in grades of formal education completed. Incomplete grades, or years necessary to complete a certain grade were not to be taken into consideration.

Item 12. Adult literacy classes. Any participation at any time or for any length of time would be considered an affirmative answer.

Item 13. Married state. The participant's response would be accepted

as stated, even when in variance with reality (married vs. free union, for example).

Item 14. Number of children. Surviving children, as infant mortality in the rural areas is high.

Item 15. Persons living in participant's residence. The number of the extended family and non-family, if that was also the case.

Item 16. Days per week the participant listens to the radio. The number of days in an average week that one listened to the radio, even casually; multiple listenings in the same day were counted as a single day.

Item 17. Days per week one watches television. Total number of days in an average week, even if it may be just a few minutes standing in front of a store window.

Item 18. Days per week one reads a newspaper. "Reading" included merely glancing through. The number of newspapers were not counted, but rather the number of days some kind of contact was had.

Item 19. Days in the past month one has read a magazine. The classification would include comic books, fotonovelas, and different kinds of pamphlets or tracts, and we would count having read the same thing twice if it had occurred on different days in the same month.

Item 20. Occasions during past month one has gone to a movie. Included here would be the rare occasions when a movie, whether entertainment or didactic, was brought to the community from outside (except when it had been brought by UCLA).

Items 16-20. People were usually not sure of the exactness of their responses to these questions; in case of a vague or very general answer, e.g., "a few times," "very little," an attempt would be made to reach as accurate an approximation as possible through more precise wording or requests to the participant to try to remember about how many times in each case.

Item 21. Language spoken. The language used most often, whether at home or in the market, was to be indicated; the language or combination of languages the person spoke best. Answers were accepted as given, even when at variance with the facts (i.e., a person may speak or understand Quichua yet deny it to a questioner because of that language's lower status.)

Item 22. Membership in a community organization. Any organization within the community that was formally constituted (i.e., not groups of friends or informal sports teams), regardless of its level of activity.

Item 23. Position of leadership within a community organization. The positions of leadership were president, vice president, treasurer, and secretary. General membership alone would be marked as a negative response.

Item 24. Religion professed. Responses were accepted as given. Answers such as "liberal," if unable to be pinned down to a specific, recognized sect, would be marked as "none."

Draw-A-Man. The participant was asked to draw a complete human figure--man. Initial refusal (a common phenomenon) would be met with assurances, coaxing, support, and even suggestions (as to subject,

not particular items within the drawing) from the field worker. One, two, and even three refusals would be argued, but after that we would simply drop the matter. If the person wanted to draw the figure from a magazine or newspaper, we would suggest he draw it from memory or imagination.

Identification of letters, syllables, and individual words. Each section was done one at a time, the field worker asking for the identification of individual items from an array of possibilities.

Reading of sentences. The field worker followed each reading closely, identifying those words read correctly.

Writing of participant's name, individual words, and sentences. Words were counted individually on each item (there were six); for this item "correct" was anything that was legible and that, when read phonetically, could be understood within the context of the sentence. This allowed a fairly wide leeway in terms of missing letters, missing or wrong accents, lack of capitalization, etc. Since we were measuring functional literacy, what could be read and understood by an average Spanish speaker was accepted as certainly functional.

Since there were often differences of opinion as to what was legible or understandable, the final point score on each item was determined by the coordinator and the administrator.

Identification of numbers. These four items were done one by one, the field worker reading the individual numbers (each item has two to be identified) and the participant identifying them with a mark.

Orally-applied math (addition, subtraction, multiplication) problems. Each problem was given slowly, clearly, and one at a time. The participant was reminded not to hurry and to think carefully. The problem was repeated if so requested. The field worker was allowed to encourage and assure the participant, but not to help him in any way. Participants were allowed to count on their fingers, but not to write down the problem.

Written math problems. To be done by each participant working alone. The field worker was to watch the process, reminding the participant to be careful, to read the problems carefully and to take all the time he needed; encouragement to continue despite difficulties was allowed but no actual help or advice. If directly asked about a certain problem, the field worker was to either refuse to help or answer only very generally (e.g., "Where does one begin with that kind of problem?" "What is this number? Does it go there?" "What does this sign mean?" etc.).

Critical Consciousness. This was by far the most difficult section to standardize across field worker and individual participants. Each question was to be asked a first time as it was printed on the instrument; if not clear, it would be asked again, more slowly, using "replacement" words for certain phrases we had had difficulties with in the field testing (these "replacement" words were printed above their respective phrases and thus standardized).

The problem areas were two. First, if the question was still not understood after the second reading, the field worker would

have to adjust it to fit the conceptual level of the interviewee, while trying to retain its essential thrust. Second, the variety, length, and vagueness of most of the respondents' initial answers defied the neat numerical codification appearing on the instrument. The interviewer would then have to question further the response, clarifying it or trying to narrow it down to fit the possible codes--at the same time making sure it was an honest answer, one that did indeed express the participant's feeling on the particular issue.

When the literacy and numerical skills tests were expanded (Version 2) in December, 1974, with the addition of more difficult sentences to be read and written, this questionnaire procedure remained the same.

Work Diaries

Any field investigation requires the keeping of detailed work diaries involving personal observations and analyses, procedures followed and their apparent impact, informal conversations, and any other kind of general information that would shed light on the subject at hand. This is all the more important in an investigation as complex as that carried out by UCLA in its evaluation of the educational materials. On the one hand, we were testing concrete materials that claimed to have both definite, measurable results and also results that were equally vital to identify though less tangible (e.g., changes in awareness, attitudes and behaviors). As a second factor, we were considering a series of processes (e.g., introduction to a rural community, establishment of a learning group, motivation towards a more dynamic outlook) that also were claimed by UMass NFE and the other NFE projects (e.g., CEMA) to have both visible, measurable results and results that perhaps could never be completely identified.

Within such a charge, the work diaries would logically be serving the function of identifying and analyzing, where possible, the innumerable factors that would influence the use of materials and the processes. A second function would be to identify those less tangible results effected by those same materials and processes.

We needed a detailed mass of information on each community, and to obtain it a detailed outline of a model work diary was developed. This was then broken down into three "sub-diaries," two of which were put on separate, detailed forms and the third--the diary itself--which would merely follow a structured set of guidelines for making more general observations.

The introduction of the UCLA project into each rural community was identified as a key element in the total evaluation process, given the importance of local support and mutual trust for the project's success. A description of the introductory steps was to be the first part of the original field diaries, with the same information later pulled out to form a separate, comprehensive record of this phase.

Our focus was on the two major variables in any such introduction:

1. the sector of the community with whom the original contacts are made, and
2. the apparent "openness" of the community to this kind of outside project.

A detailed description of the first steps was provided for each community: contacts made outside the community (e.g., with the local priest or teniente político); and, how this led to an identification of community leaders. Then we worked for a complete list of the people within the community with whom "exploratory" talks were held--how they were contacted, if the visits were made by the field worker alone or accompanied by an outside contact, what aspects of the program were explained and to what degree, and what were the questions raised by the in-community contacts.

The next step in our outlined procedures was to call a community meeting in order to inform the people of the project's methods and goals and to ask for the participation of interested residents. This step was broken down into its several components and described at length in the diary. We wanted to know how the meetings were arranged (Who called them? Were they for the purpose of introducing the UCLA project, or was the field worker

able to "piggy-back," taking advantage of an already-scheduled community meeting?). Other questions were: How many meetings were eventually needed before there was enough interest and support to begin the program, and how each meeting developed (what explanation was given by the field worker? What questions or doubts were raised by the local residents?). Then we took a subjective look at the process followed to that point: What had been the reactions of the community leaders? of the residents? What were the positive reactions towards the project and what were the negative ones? How did these help or hinder the formation of a learning group there? No less important, we asked that the field worker describe his or her own feelings and reactions toward the community, the people, the process being followed.

In short, how did the particular group of participants come to be formed? From the demographic data obtained on the community and, in more detail, on each individual, we could see if the group was a microcosm of the entire community or if the project had been able to attract only certain kinds of people or certain sub-groups within the community. The information on the introductory steps would indicate the characteristics of the group and why these kinds of people became interested in the program. Inferences drawn from information thus available would then indicate which additional steps (e.g., contacts outside the community leadership circle, individual home visits, further information, etc.) ought to be taken to attract the kind of individuals at whom the UMass NFE materials are aimed.

The second key step was the use of the educational materials, and a four-page form was developed to document their application in each session in each community. After noting specific data of the session--which game

played, number of times it had been played to that point, number of participants and number of observers in attendance--the descriptive outline follows our procedural steps for use of the materials:

1. what was done to help form a "learning community" and did it accomplish its goal (i.e., informal games, story-telling, etc., to relax the group)?

2. a list of all the objectives that were set for the game at this particular session, noting if they came directly from the participants or were suggested by the animador.

3. a narrative description of exactly how the game was introduced: rules and explanations by the animador, suggestions by the participants, questions that arose and how they were answered.

4. any interesting points or problems that arose during the play of the game, and how they were developed.

5. a description of the different ways the game was played in the course of the session. Were these changes suggested by the animador or by the participants? Were there any special observations made about these new ways of playing? more effective? problems?

6. data on active participation in the game: how many of the matriculated participants played and how many merely observed? How long was the game used (aside from introduction, question, etc.)?

7. a detailed list of the most important ideas or concepts that came out during the game. (In the case of the literacy games, it would be a list of the most important words.) These would be the ideas or words selected by the participants as most important after the game had been concluded.

8. how were each of these ideas or words developed in the "reflection" period? What questions were raised, where the discussion went and how it progressed (were the participants active or passive? to what extent did the animador have to intervene, suggest, and even direct?).

9. returning to the objectives for the game that had been set at the beginning of the session, how were they reflected upon? (i.e., did the participants feel the objectives had been met, and to what degree? Had they been set too high? too low? Could the objectives be met with this game at all?) Which of the objectives had not been satisfied by the end of the session? Why not?

10. how were the conclusions reached by the group? Did the group commit itself to any concrete action or activity? How were these conclusions reached through the ideas expressed in the games and discussions? --or were they?

11. how was the next reunion planned? What did the group suggest for the session (i.e., informal activities, new ways to play the game, etc.)?

12. personal reactions of the animador. Was there a feeling of cooperation? Did the session go smoothly? (Why or why not?) How does he or she feel with the group?

13. general observations. These would cover such things as feelings on the level of interest in the group, general progress of the program, utility of specific games vis-a-vis specific groups, etc.

This form was constructed to be read individually as well as part of the series in each community. We sought to detail the use of the games as individual events, identifying factors at each step of the process (intervention of the animador, level of participation by the group, etc.) that bear on the ideas that emerge and how the ideas are developed in the "reflection" stage. Then we wanted to have a sequential description of each non-formal game in the communities in which it was used in order to be able to trace key changes that might be expected to be observed over time: feeling of group identity and confidence, adaptability of the game to group needs and desires, conscious utilization of the game as a learner-directed educational experience, ability to explore and expand upon the ideas that are sparked by the game.

This exhaustive examination of each session is crucial in accounting for either cognitive or attitudinal changes that are observed in the quantitative data, as no game was used in exactly the same manner in any two communities.

Our third qualitative "control" on the field work experience was the more loosely structured work diary itself, meant to fill in the observational gaps between the initial introduction and the game sessions and between the sessions and the community at large. The diary was to be subjective, calling for a self-examination of the evaluation process at work; how and where the instruments were applied, problems encountered with their use, reactions and questions of the community participants involved, personal feelings toward the work itself and the community. Impossible to quantify, the information was nevertheless vital since the evaluation had to deal with processes that influence the relative success of a non-formal education program--processes that are implemented at a very personal level. In short, how do certain kinds of people (e.g., a field worker) implement well-defined processes with a kind of reaction from rural peasants?

In addition, we asked for subjective data on the communities themselves in order to obtain a fuller, more operational picture than that presented in the demographic profile. Specifically, what were the various facets of community life--economic level, geographic mobility, openness to outsiders, educational level, internal socio-economic differences, relative dissatisfaction--that would influence the development of an educational program in that community? And as a "check" on these appraisals, we obtained a comparative look at each community in terms of its neighboring villages. (These forms appear in Appendix A.)

UMass Impact Profile

This is a ten-page form filled out for each of the eight rural communities intervened by the Umass project in which the evaluation studied their

impact. These were completed in the course of the observational site visits and interviews in each of the villages. The profile gathers information on the facilitators (the community people trained in the use of educational games and leadership qualities) and on the various UMass non-formal materials that were used in the community during and after UMass NFE intervention.

The facilitators. After determining the length of direct UMass project activities (i.e., training of facilitators through to the last site visit by project personnel) and the scope of community participation (age, sex of the participants in the learning group), the profile asks about facilitators themselves--age, education, occupation, their selection as facilitators, training received, amount of economic compensation (if any) received for their work. This information was obtained through personal in-depth interviews with each (where possible). No difficulties were encountered as most of the facilitators still lived in their communities and were quite willing to discuss the participation in and opinion of the UMass project. These data serves as quantifiable background to the interviews, allowing the evaluation to assess the activities of the UMass project in personal terms. It is designed to aid in answering evaluation question #3 (the effectiveness of the UMass project in implementing its objectives) and #7 (teacher/facilitator variables as related to the effectiveness of the materials).

The non-formal materials. The second half of the impact profile is an attempt to quantify the range and depth of the materials (games, fotonovelas, literacy methods, radio programs) used in each community. Thirty-five educational games, three "expressive methods" (posters, rubber stamps,

the Ashton-Warner literacy method), the fotonovelas and the radio programs had been identified in UMass project documents, reports and personal interviews as having been developed and field tested in rural Ecuador; each was included in the profile and its use (which games and how many times) determined by interviews with the facilitators. These figures are exact to the extent possible (some games had not been played in more than two years), but also serve as a kind of perceptual "check" in that their impact can be judged by how well they are remembered by the facilitators. This information aids in answering evaluation question #3 (the effectiveness of UMass project implementation) and, to a somewhat lesser degree, #5 (the characteristics of the more and less effective non-formal materials). The impact profile form appears in Appendix A.

Annex to the individual test in the UMass sample. In addition to the test instrument given to the UMass NFE participants (same one used in the evaluation and "control" communities), each participant in the UMass impacted communities was interviewed on a standard format concerning their personal perceptions of the non-formal materials they had used. They were asked to name those games or materials that they could remember (or to describe them, with the evaluation staff filling in its common name), and how long it had been since they had last attended a session where the materials had been used. Then the individual was asked to classify the games by which he or she had liked most and which they had liked least. To get at the question of the games' educational impact, we asked if the individual learned something from them, and if so, what? (e.g., spelling, reading, math, about life, and combinations of these). To measure the

impact on the person himself, we asked the participant to judge the games in general according to their effect (great, some, little, none) on his or her personal life, on their family, in his or her work and economic life, and in the community at large.

This information, though quantifiable, is taken more as an indication of the UMass project's effect at the individual level. We wanted to know how people not trained in the materials or the project goals viewed the games and the processes followed. In short, had they had an impact, according to the individual, in fundamental skill acquisition, on attitudes toward self and community? The answers to this would help us in answering evaluation question #3 (effectiveness of the UMass project implementation).

This annex appears in Appendix B.

STAFFING

In this section, the staffing of the project will be discussed. Procedures for selection of field workers and their training constitute the major portion of this section. A discussion of criteria for selecting a field coordinator is also provided.

Selection of the Field Workers ("Animadores").

With a fairly clear idea of the kind of work that would be involved in gathering the data for the evaluation (physical and social setting, kinds of people to be worked with and on what basis, type and range of instruments to be used), the care with which the implementers--the field workers ("animadores")--were chosen was of crucial importance.

Since the evaluation design did not call for the use of people from the community itself as the group leaders, but rather someone from outside who would be the group "animador" (animator) in several communities, a markedly different set of criteria than that developed by the UMass NFE Project for their "facilitators" had to be drawn up.

On the assumption that there is a noticeable cultural difference between coastal and mountain Ecuador (i.e., linguistic idiom, personal style, mode of dress, perception of self and outsiders), and since the animador was not to be from the community or possibly, even the same area, we postulated that he or she should at least be from the same geographical region--Coast or Sierra--as the communities in which they would work in order to reduce the chances of "cultural static" affecting the outcomes of the evaluated materials. In instances where field

workers from the same region were not available, we felt it urgent that the field worker have extensive work experience in that area.

A second criterion used in selection was work experience in rural communities; a familiarity with the way people in rural areas work, act, and think was deemed vital, given the nature of the evaluation (i.e., long periods of time spent in small villages and qualitative judgments that would have to be based on an understanding of the milieu). But we were looking for more than just experience; we had to probe for the personal qualities that a person had brought to a previous experience and would have to bring to this one. Was the prospective field worker disposed to travel long distances under less than ideal conditions, spend extended periods of time in small, isolated villages, work long hours at night and on week-ends? And even beyond that, did the person have the ability, the desire, to establish relationships of equality with villagers, to truly share in the rural life style? High standards indeed, and difficult to answer "yes" or "no" for any individual.

Our task in the rural areas was dual, to implement a non-formal adult education program and, at the same time, to evaluate it. The skills discussed heretofore related to that first task; the second one called for much more specific skills since it dealt with the careful documentation and analysis of the processes being implemented. Thus, we set down as a criterion for our animadores previous experience in some kind of social investigation. First and foremost, we wanted a responsible person--one who could follow the processes and the work calendar without the need for constant supervision and correction. Secondly, it meant finding people with a discerning eye; people who could sense feelings in another person, make sense out of the subtle nuances of

daily life in a village--and report these observations in a clear, concise manner. (After some consideration, we discarded the idea of setting an educational criterion [i.e., a certain level of schooling], deciding that it was relatively unimportant compared to some of the other attributes under consideration.)

Our search began, as with the rural communities, in Quito--interviewing people from AID, SEV, CEMA, UMass, and the Ecuadorian universities to first compile their recommendations into a list of field worker candidates. This process alone was enlightening; Ecuador, despite its overwhelmingly rural population, offers few institutional means by which young people from urban areas or the universities can work in the rural environment. Even fewer are the opportunities for work in social investigation, since private institutions are rare and the government as yet has taken little initiative in this area. Not surprisingly, then, we would have to lower our sights considerably in the selection of field workers, choosing those candidates who were particularly strong in one or more areas while revising and intensifying our plans for their training.

The list of candidates was narrowed to the ten most qualified; none met all the criteria, but all had experience that would be valuable to the evaluation. Each was interviewed individually by the project director and the Ecuadorian technical advisor with the emphasis on open-ended questions designed to probe their desire to work and their originality in handling difficult situations.

The five-member team chosen presented an excellent cross-section of talents and backgrounds: two women and three men; two with experience on the Coast and three in the Sierra; one campesino, two SEV (Servicio

Ecuatoriano de Voluntarios) volunteers, and two with social investigation backgrounds. The training, detailed in other sections, was designed to give a theoretical framework to the evaluation effort and to specifically fill in those skill areas that were so necessary; in short, to prescribe and standardize the way in which each would carry out his or her work in the communities.

The actual demands of the evaluation effort proved to be much, much greater than we had anticipated. Physically it was draining; long days of interviewing, which involved a tremendous amount of legwork, followed by evening game sessions, all under comparatively primitive conditions of hygiene and alimentation. Coupled with the weight of working alone (except for occasional visits from the supervisors), the field workers began to feel strained and edgy. The other major aspect of the work--carefully controlling implementations and evaluations and fully documenting all activities--was the cause of further problems with the staff. A few were simply not convinced that all of the control and documentation were of any real importance and did them only under duress, while others were unable to do an adequate job for lack of skill in observing and writing.

The pressure, then, was being felt from both sides: the demands of working in rural areas and the demands of a thorough evaluation. Three of the original team eventually left the project, unable to come to grips with its multiple requirements. It was, at the time, a serious blow, but it forced the project and its staff to re-examine ourselves in light of four months of direct experience.

An intensive review of all of our procedures was undertaken: criteria

for selection of communities and field workers, procedures to be followed in the communities, the data of the evaluation, and the supervisory effort. In the end, we felt it to be a question of people--people who enjoyed working in the countryside and got a deep sense of personal satisfaction from it, people who were mature enough and honest enough to deal with problems in an open, receptive way. We had found that previous experience was of little concern, but rather the most relevant factor was the attitude with which one approached the work; the rest was a question of training.

In selecting new field workers, then, we scrutinized much more closely the individual's personality: motivations, inner strengths, maturity. Work experience was taken into account, but only as an indication of where we ought to put the emphasis in the subsequent training. The four people we chose to augment the team were, again, a mixture of origins, backgrounds, education, and experience--but this time selected on the basis of reordered criteria and, most importantly, our own scorching experience. The quality of their work in the following months proved the correctness of our altered focus.

Coordinator

The position of "coordinator" was a key element of the evaluation's field design. For a variety of important reasons (the physical dispersion of the field team, the physical and cultural conditions in which they would be working, the importance of accurate data collection, etc.) there was the need for a person--preferably Ecuadorian--who could supervise the workers in the evaluation sites, coordinating and standardizing their efforts. In addition, the coordinator was to help with the training of the animadores, and to contribute to the analysis of the

non-quantitative data at the end of the project.

The criteria were stiff, befitting the demanding work that would be involved:

1) experience in educational evaluation in rural areas of Ecuador.

2) experience in supervising the work of others.

3) ability to organize data to answer evaluation questions.

4) ability and desire to travel and to spend prolonged periods of time in isolated rural areas.

The selection process began with interviews with personnel of AID and of Ecuadorian institutions involved in either evaluation or rural programs. Each of the candidates gleaned from those contacts was then interviewed at length by the project director.

Srta. Pilar Núñez was selected as the evaluation coordinator, coming to the project with the highest recommendations from AID Mission, from Dr. Donald Swanson, head of an independent evaluation group in Quito, and also from the UMass NFE project staff.

Training of Field Staff

The original five-person evaluation field team was trained in Quito during the first three weeks of September, 1974. Training sessions for new field workers were shorter, reflecting the experience of the first several months in which we were able to identify those aspects of the work that were most difficult to grasp and therefore needed greater emphasis. These sessions were held during the last week in November, 1974, and in mid-January, 1975. All three sessions were immediately followed by concentrated supervision in the field.

The training procedures are discussed here only in brief outline form; a more detailed description of the specific procedures and the weight given to each can be found in the separate discussions of evaluation instruments, procedures for introduction to the rural community, and utilization of the UMass materials.

Each training session began with the theoretical background of the evaluation design: what is evaluation (as opposed to investigation or community development), what are the questions it tries to answer, and how is that information gathered. This explanation was always a major component in the training; there has been relatively little evaluative experience in Ecuador and the demands involved (in terms of scope and quality) had to be made very clear to people whose experiences had been in other fields. (We found this to be especially true in the case of those workers with previous rural community experience; confident in one aspect of the project--implementation of materials--they confounded it with the other aspect--evaluation of those materials).

The theory was closely followed by the concrete case of this particular evaluation--its procedures and instruments. Each step in the design was broken down into its various components and thoroughly discussed in terms of why it was important and how to carry it out: the measuring instruments, the community and game processes, the accurate reporting of non-quantitative data.

The first session (September 1974) included a supervised field test in a rural community near Quito; subsequent sessions (November 1974, January 1975) also had field practices, but these were held in the actual evaluation communities already being impacted.

The UMass NFE educational materials were introduced to the September group by UMass personnel, who not only gave the background of their project but instructed the team in the manipulation of the games as well. The short, one day "courses" were extended and run by the UCLA evaluation staff itself for the second and third training groups.

The September session also concentrated much of its attention on motivational training: inter-personal relations, personal goals, group dynamics working as a team, etc. While useful, we found the techniques were not directly applicable to the task at hand; we had been trying to create a motivational base instead of specifically selecting people that already had that foundation. This part of the training was down-played in subequent sessions, except where it might touch on actual experiences in the communities: techniques of soliciting answers to questions, making others feel important, running a game meeting in a democratic way, etc.

Standardization of procedures had been a major goal of the original September training, but had proven extremely difficult to attain under the conditions in which we worked. Nevertheless, as a fundamental consideration in any evaluation, it was treated at length with the November and January field workers groups--not only why it was so important but also means for achieving it even under adverse, often confusing circumstances.

Training was not limited to a period before the field worker began in a community, but was followed-up by a series of group meetings (all the field workers and staff) to review the steps and the problems encountered. The early October meeting in Quito focused on a detailed review of the first week in the field--everything was discussed and strategies designed to overcome unforseen circumstances (such as resistance to our questions being asked) at a time that the rather unpopular agricultural census was being taken.

The second general training meeting was held in Baños in late October. It included practice through simulation community situations.

Training for an evaluation such as this, where at least half the project is implementation as well, is complex. The context of the work, isolated rural communities and the physical difficulties to be found there, seems to require that an animador have previous experience in such communities in order to minimize the "shock"; we found this to be, at best, only partially true. Rather, it was a matter of the kind of person behind the experience; people with great experience, but of a loose, undirected nature, can ill adapt their style to an evaluation study, while people with no experience, but the inner strengths and drives to sustain them in difficult situations, can be excellent field workers because they see it as a rewarding experience. No training can impart the desire and willingness to work within narrow boundaries under frustrating conditions; a training design can only build on an already existing structure.

On the other hand, intensive, repetitive training in the use of evaluation instruments is of crucial importance, regardless of an individual's experience. Standardization in this area is absolutely necessary.

Field supervision and continuous follow-up training are the other important aspects of field worker training. They serve multiple purposes, personal as well as professional. The supervisors have a chance to see how effective the training has been, experience for themselves the problems faced by the animadores, and then design new programs or altered procedures to deal with the reality of the field. The field worker has the chance to "sound off" on his problems or complaints, getting individual support

during the site visits and that of his colleagues during team meetings. The keys to the success of such an interchange, however, are flexibility and maturity: the ability to deal with problems in an open, receptive manner; adjusting procedures to meet those problems without sacrificing the needs of the evaluation at hand.

IMPLEMENTATION PROCEDURES

A number of steps were involved in implementing the procedures of this evaluation plan. Quite obviously, great care had to be taken in the manner in which the communities were selected. Obtaining access and acceptance into the communities was a vital next step. In this section, we have also described the specific procedures related to the introduction of the UMass NFE game materials. The final part of this section deals with the procedures used in selecting subjects both those who were participants in the games and those who were "controls".

Selecting Communities for Implementing and Evaluating Non-Formal Education Materials.

The evaluation design called for a limited replication of the UMass project procedures for introduction and use of educational materials. Since the evaluation project team was charged with the responsibility of determining how much people learned and to what extent "critical consciousness" was developed with the materials, the first question was "What people? where?" We decided to evaluate the materials under the same physical and cultural conditions as they were used by the UMass project: in a series of moderately small rural communities in the highland provinces of Chimborazo and Tungurahua and in the coastal province of Guayas.

UMass project documents describing the facilitators projects in Tungurahua and Chimborazo (A New Approach to Community Education by V. Ickis, 1972), in the Columbe region of Chimborazo ("Columbe" by D. Andrade, 1973), and on the coast ("Colonche" by B. Alcocer, 1974), specifying clearly the

criteria which the UMass project used in selecting the communities to be impacted; except for minor changes they are the same criteria for all three areas, and were not substantially altered between 1972 and 1974. They are:

1. of "mestizo" ethnicity because of the linguistic and cultural barriers existing in Indian communities (the exception was the Columbe project, in which all the communities were to be Indian communities).
2. accessible by heavy-duty jeep in almost any kind of weather.
3. relatively "untouched" by outside institutions or programs.
4. a high level of "aggressiveness" (i.e., organized, active in civic programs) and a high level of relative dissatisfaction with existing conditions.
5. illiteracy considered by the local population to be a major problem of the community.
6. economic viability (i.e., a sound enough economic base to support proposed activities and changes).
7. homogeneous with other communities in the same area (this in terms of ecological resources, major occupation of the residents, per capita income, physical infrastructure, number of inhabitants, percentage of illiterates, and ethnic composition).

The evaluation project team adopted these criteria for the selection of communities for implementing the games but with minor adjustments. We considered the ethnicity of the community to be less important than the language spoken there, given the monolinguism of the education materials we were evaluating. This would in no way eliminate Indian or partially Quichua-speaking communities but rather the monolingual Quichua ones only. We agreed that the communities should have had as little organized impact from outside as possible, and in no case were they to have had any impact by the UMass program; for purposes of honest measurement, the evaluation communities were to be "virgin." Finally, we put less emphasis on the presence of "aggressiveness" or of illiteracy as a

conscious community problem, since we had no way to adequately identify them as such beforehand; rather, we sought communities that did have some kind of local organization(s) and that had little formal schooling available for the residents. We added the criteria of "regular size," apparent in the UMass project's own selection of communities though not stated as a criteria; that is, communities of between 200 and 1,000 inhabitants--enough to support an adult education program.

The rural communities selected by the present evaluators for introducing the non-formal education games and concomitantly evaluating their effects were selected then, according to the following criteria:

1. communities which had not been impacted by the UMass project.
2. communities that were small and rural (approximately 500 to 2,500 persons).
3. communities not consisting of migrants (since the evaluation calls for repeated participation in the treatment and repeated measures).
4. communities which were mostly Spanish-speaking.
5. communities similar to those chosen by the UMass project for impact (similar in terms of economic development, size, geographical area, type of economy, social and educational development).

Our search for communities in which to implement and evaluate the selected non-formal educational materials began by identifying the UMass-impacted areas within each of the three provinces in order to select communities that were in areas physically and socio-economically similar to the UMass-impacted communities; our intent, of course, was a replication that would be as accurate as possible.

Then, armed with detailed maps of these regions, two evaluation team members (Dr. Laosa and Mr. White) set out to interview a variety of people

who were familiar with the various zones and could indicate possible communities: UMass project personnel and field workers, Servicio Ecuatoriano de Voluntarios (SEV) personnel, people who had worked with the original Centro de Motivación y Asesoría (CEMA) non-formal education project, and UMass NFE community facilitators. In each case the nature and purpose of the evaluation was spelled out, as well as the characteristics of the villages we were looking for; in turn, we would solicit a list of communities where we might work, as well as accompanyment (if and when possible) to those communities to make critical contact with the leaders. From these interviews the evaluation team obtained a list of between ten and fifteen possible evaluation sites in each of the three provinces.

The next step was to visit the communities again personnally in order to verify more closely the extent to which they met selection criteria and to make contact with the local authorities. This was carried out by the Ecuadorian evaluation field workers themselves, following careful instructions by the director. In each of the regions they visited--the Píllaro and Quero areas of Tungurahua, several areas in Chimborazo province, and the Santa Elena peninsula of Guayas--they visited each of the communities on the initial tentative list, filling out a brief demographic profile that indicated the degree to which they met the evaluation criteria; in addition, they met with the local authorities and community leaders to gauge their receptiveness to the program. A secondary goal of the visits was to identify and describe, either by a direct visit or interviews with local leaders of nearby communities, other possible communities in the same region.

The profiles and the reactions of the field workers were brought back to the Quito office and reviewed. From these discussions the evaluation

team selected five communities--one for each field worker--that would definitely be impacted by the UCLA implementation/evaluation in the first week of field work. Those that had not been rejected outright were put on a "pre-selection" list; they would be explored more carefully in the following weeks and would eventually serve as the remaining evaluation sites.

These same careful steps were followed throughout the year as more communities were added to the UCLA implementation/evaluation. Our experience often paralleled that of UMass project personnel, in that we continually found it impossible to locate communities that met all the criteria for ideal impact areas. Rather, we chose those that, within given areas, met most of them.

We placed emphasis throughout on the personal visits made to the communities before their definite selection, and the wisdom of this was confirmed by the later field experience. The verification of data required by our demographic criteria was important, but even more so were the contacts made with community leaders and the field workers' reading of the "atmosphere" for the success of the program. The feelings and impressions--so often intangible--taken from a community were ususally as reliable indicators of that community's possibilities as were the specific, identificable characteristics.

Within the acceptable range of variance from the selection criteria, we encountered a great number of possible evaluation communities, some 25 of which we impacted to one extent or another. Some were unsuccessful from the outset, while others presented a variety of problems in the implementation of the program and thereafter. Each of the communities is described in Appendix C.

UCLA Experimental Communities Demographic Profile

Communities	Population	Principal Occupation	Ethnic Composition	Language Spoken	Electricity	Potable Water	Public Health Services	No. Adult Literates (est.)	No. Adult Illiterates (est.)	No. Radios (est.)	No. Television Sets (est.)	No. Means of Transportation Used	No. Outside Agencies in Community
Tungurahua Province													
San Andrés	450	Ag	I>M	S>Q	Yes	No	No	140	250	50	3	6	2
San Pedro	1,200	Ag	I	S=Q	No	No	No	150	300	50	0	4	1
Urbina	350	Ag	M>I	S>Q	Yes	No	No	100	200	30	0	4	1
Rumipamba	800	Ag	M	S	No	No	No	400	120	80	0	6	2
Hipolongo	500	Ag	M	S	No	No	No	(NA)	(NA)	35	0	5	2
Yayuliguí	500	Ag	M>I	S	Yes	No	Yes	300	10	70	8	6	4
San Antonio	468	Ag	M>I	S	No	No	Yes	200	115	60	0	6	3
San Francisco	840	Ag	M=I	S	Yes	No	No	650	85	80	2	6	2
El Calvario	600	Ag	I>M	S	No	No	Yes	450	60	120	0	5	3
Chimborazo Province													
Asunción	380	Ag	M	S	No	No	No	300	40	48	0	0	5
San Isidro	650	Ag	I	S=Q	No	No	No	140	300	185	0	1	7
La Libertad	337	Ag	M	S	Yes	Yes	No	200	17	60	3	2	5
Miraflores	490	Ag	I	Q>S	No	No	No	100	399	30	0	3	5
Jiménez	413	Ag	M>I	S	No	No	No	300	113	60	0	1	5
Pilchipamba	478	Ag	M	S	Yes	No	No	300	50	80	0	1	5
Guayas Province													
Olón	863	Ag	M	S	No	No	Yes	(NA)	(NA)	45	0	6	1
Montañita	734	Ag	M	S	Yes	No	No	500	200	60	0	5	3
Dos Mangas	663	Ag	M	S	No	No	Yes	(NA)	(NA)	90	0	6	1
Cadeate	753	DL*	M	S	No	No	No	(NA)	(NA)	(NA)	0	5	1
Barcelona	967	Ag	M	S	No	No	No	700	200	100	0	7	1
Palmar	2,500	F	M	S	Yes	No	Yes	1,870	130	300	6	5	1
San Pablo	1,500	DL	M	S	Yes	No	No	925	50	150	3	4	1

NOTES: Occupation
Ag = Agriculture, F = Fishing, DL = Day Labor (factories, shops, agriculture, fishing, manual labor; DL* where exclusively agricultural)

Ethnic Composition
M = Mestizo (physical features, dress, customs), I = Indian (physical features, dress, customs)

Language
S = Spanish, Q = Quichua

Relations
= in equal proportion, > more than

UCLA Control Group Communities Demographic Profile

Communities	Population	Principal Occupation	Ethnic Composition	Language Spoken	Electricity	Potable Water	Public Health Services	No. Adult Literates (est.)	No. Adult Illiterates (est.)	No. Radios (est.)	No. Television Sets (est.)	No. Means of Transportation Used	No. Outside Agencies in Community
La Tranquilla	525	Ag	M	S	No	No	No	300	50	60	0	5	4
Los Santiagos	661	Ag	M	S	No	No	No	(NA)	(NA)	100	0	6	1

NOTES: Occupation
Ag = Agriculture.

Ethnic Composition
M = Mestizo (physical features, dress, customs).

Language
S = Spanish

Introduction to the Communities

After identifying a possible area for UCLA impact, or even possibilities among individual communities, the field worker (sometimes accompanied by the supervisory staff) would make initial contacts with formal authorities outside the community itself: the parish priest and the teniente político (the area-wide political authority, appointed by the provincial government), and the school teacher. The purpose of these contacts was multiple:

1) to inform them of our presence, and to outline our methods, goals, scope and institutional links.

2) to seek information concerning individual communities in the area--communities that would be interested in such a program, the level of cooperation we might expect there, and the names of community leaders (informal as well as formal) with whom we could continue the conversations.

3) to seek their support in the program--a passive support at least, and an active one if possible (i.e., accompaniment of the field worker to the community and in making the first contacts there.)

These contacts were of the greatest importance. Local authorities generally have a great influence even at the community level; their support--or at least their acquiescence--is a "sine qua non" for successful entry. They are, as well, jealous of the influence they wield and must be kept informed--and reassured--about the nature of programs that operate in their areas.

Next was the contact made with the community itself, through visits to its leaders, formal (president of the cabildo, leaders of the different organization) as well as the informal (the identifiable "movers" who may or may not hold an official position). Again, a detailed explanation was given of the UCLA program--its nature and scope, and what would be

needed in the way of local participation and support. These contacts might be made individually with the different leaders, or through a meeting with the cabildo as a whole, or other local organizations. Questions were answered and, hopefully, their support enlisted.

A general meeting to inform the residents of the community was then called; it could be specifically to introduce the UCLA program, in which case visits would be made by the field worker and, ideally, one or more local authorities. These visits were made to individual homes to invite the people to attend, or sometimes they were "piggy-backed" on an already scheduled meeting of some kind (e.g., the town council, the sports club, the Padres de Familia--P.T.A.).

The steps to be taken at these information meetings were detailed in outlines developed in September, and were to be followed as closely as possible. A good deal of information had to be imparted, which in turn would raise questions and doubts on the part of the residents that would have to be clarified. If great care was not taken here, there would be a recurring problem of uncertainties and possibly suspicion throughout the course of the program.

First, the animador was to "recognize" the local authorities, thanking them for their help. Next would be a detailed explanation of the UCLA program: what the participants could expect from the project and what the project would expect from them. Emphasis was placed in the mutuality of responsibility, and the fact that the project did not include material aid to the community but rather was strictly educational. At this point ques-

tions were solicited--clarifications, expectations, doubts, even objections; each was treated as important and answered fully. If the field worker determined that another meeting would be necessary to ensure local participation, this would again be arranged through the community leaders. If not, the meeting proceeded to the next step.

A "work calendar" would be established with the interested group: a day and time most convenient to them for the weekly sessions, and the setting aside of several days before hand during which the animador would be in the community to take the pre-test. Arrangements would also be made for the site of the sessions, again making it a decision to be made by the group and not the field worker.

Having outlined the characteristics of the people with whom the project was most interested in working (and reassuring the group that anyone could attend the sessions, indeed that we welcomed the participation of everyone), the field worker would then "enroll" the formal participants (i.e., taking down their name and arranging a time and place for the application of the pre-test). If an adequate number of participants could not be enrolled at one meeting, the help of the others was enlisted to notify neighbors or friends.

Besides the step-by-step development of the introductory sessions, they were to be as informal as possible; the animador was an informant, a community resource, and not a traditional-style teacher there to impart knowledge and direction. We emphasized the atmosphere (ambiente) of these first meetings since they were to serve as an indication of how the actual game sessions would be carried out.

After the initial introduction to the community (described in another section), the evaluation field worker would return to that community on a weekly basis. Each non-formal education game was played five times (led by the evaluation field worker) in each community, one game session per week. Thus, in each of 11 communities two games were played in sequence for a total in each community of ten game sessions over a chronological time span of ten weeks; in four communities one game was played for a total of five game sessions over a chronological time span of five weeks.

Individuals participating as subjects were individually administered a "pre-test" before the first session of the first game in the sequence for his/her community; a "second test" was given by the evaluation field worker after the first game was played five times consecutively; and a "third test" was given after the second game in the sequence had been played five times.

Selecting the Subjects (Participants and Controls)

A sample of 20 people per community was decided upon for inclusion in a "treatment" group in each community. This number was selected in order to account for any attrition occurring over the ten week period and still leave a reasonable number of participants. Even with an attrition rate of 40% per community, one would be left with an N of 12 people per community for the "third test." This would still allow statistical treatment of the data. Attrition data was also collected (i.e., reasons for attrition and characteristics of drop-outs).

Any person who wished to participate in the games was welcome. However, only those selected as "subjects" received the repeated testing. The

same subjects who tested at time #1 were also given tests #2 and #3. It was our plan that the same evaluation field worker who introduced the procedure into a community would also perform the rest of the procedures for that community in order to provide continuity. In some cases, supervisors assisted the field workers in administering the instruments. In addition to the individual testing and the Demographic Community Profile, each evaluation field worker kept a structured field diary in which he/she documented the exact procedures followed in the implementation of the games and any other relevant events or changes in the community or in individuals.

In any design involving repeated testing, it is always appropriate to compare results of the groups under study with results on the same measures obtained by a "control" group. The control group was subject to the same measurements as the treatment groups, but in contrast to the treatment groups, the control groups did not receive the treatment.

For purposes of obtaining a control group, a sample of between 20 and 30 persons of similar characteristics and from similar communities as the ones receiving the treatments were selected. The control or comparison group was administered the same individual measures as the treatment groups, following the same chronological sequence and time span intervening between measures. The control group, however, did not participate in the non-formal education game.

Procedures Followed by the Evaluation Staff in Conducting the Non-Formal Education Sessions.

As is apparent from a close reading of the UMass project-produced technical notes and field reports concerning their educational materials, as well as from interviews with UMass project personnel, the games were not conceived to be isolated objects that, of and by themselves, would produce the cognitive and attitudinal objectives. They are experimental and were seen as being at maximum benefit when used in certain contexts and following certain additional activities and procedures. For the conduct of this evaluation study, it was necessary to attain a greater degree of standardization in the implementation of games and sequences.

The methodology developed by the UCLA evaluators for the use of the materials was based in equal parts on a content analysis of each of the games to be employed, a list of the UMass project stated objectives for each game, and a structuring of the different methods and steps used by UMass in their own use of the games. We needed a method that would:

1. fully explore the range of cognitive and attitudinal possibilities inherent in each game.

2. replicate to the greatest extent possible the UMass implementation of the game sessions, and

3. be applied in a standard manner in all the communities in order to draw generalizable conclusions about both the material and the manner in which it is used.

A five-step game session outline was then developed.

1. Establishing rapport.

By means of an informal conversation about community life, local legends, local problems, or by a more structured approach using local games, jokes, music programs featuring the participants, the animador would begin each game session in an atmosphere of informality and enjoyment. With everyone--including the animador--bringing individual experiences, preoccupations,

and needs to the session, there was the initial necessity of bringing the group together as a conscious unit; at first as a means of relaxing people, who often arrived tired from a day's work, and then as an activity that would create a shared experience. There were no set rules as to how this would proceed; the field worker could suggest different activities or, more commonly, pick up on themes suggested by the participants. This way, the informality of the session was established from the outset: the session is enjoyable, it is created by and belongs to the group, and the animador is there as a resource and not as a teacher. More importantly, it created the necessary atmosphere of "group-ness" which the full benefit of the games purportedly depends.

2. Setting learning objectives.

Since the UMass project materials were not intended to be used "on" participants but rather "by" them, the playing groups must feel that they have control over them, that the materials fit the participants and not the reverse. Before beginning play, the animador would elicit from the group ideas on what things they would like to learn with the game at this particular session. When a number of possibilities had been aired, the group would proceed to an ordering of possibilities, setting priorities based on the importance to them of the suggested learning goals. This was a relatively easy step to execute, especially when the participants became more familiar with the materials, but it served several important functions. For the participant, it established a feeling of ownership over the games; forced to reflect on his true learning needs, he/she could play the game in a more concrete context and at the same time set the rules and steps by which the game would be used toward meeting those needs. For the animador, the stated objectives gave clues as to the felt needs of the participants, allowing him/her to adjust the course of the session towards those ends. Also, the objectives served as a scale against which the session could be informally judged by the group: had the objectives been met, and if not, why not? Which objectives were met and which were not? This usually provided material for group discussions.

3. Introduction and use of the materials.

The first step in the game's learning process is the "concrete experience" which will later serve as the basis of reflection at the end of the session. The "concrete experience" is, of course, the game itself as it is used by the participants. It is preceded by a brief explanation of the game (if it is the first time) or by a review of the previous session, making sure that the rules are understood. At this point suggestions concerning ways to use the game are solicited from the group--ways of playing, new rules, variations invented by participants, etc. Focus is again centered on what the participants themselves want to get out of the session.

The game proceeds as much as possible under the direction of the group or leaders from within the group. The animador facilitates play by answering questions or perhaps stopping play momentarily to discuss with the group a point that has come up during the game; he does everything possible to avoid taking on the directive role. Play continues until the group shows signs of tiring or running out of ways to play.

The second step, "reflection," is by far the most important of any game session. Through an increasingly profound process of questioning, analysis and further questioning, the "concrete experience" of the game is applied to the reality of the participants' daily lives. The animador takes a more active role during this step, beginning the questioning process at a relatively simple level and then sharpening it at each succeeding level. It is an exceedingly fine line to tread: guiding the reflection process but only in general terms since the ideas and opinions should come from the group, not from the animador.

The "reflection" process begins with a comprehensive review of what was seen to happen during the game: how did people act--together or independently? How did they feel about the experience--good? bad? confused? Were there any problems in playing the game? Then the discussion is narrowed a bit: what were the most striking things about the play just concluded? Which aspects seemed most important? Using the information generated from these questions as a base, the educational possibilities of the game are discussed: of these important aspects of the game we have identified, from which did we actually learn something, either concrete (numbers, for example) or in terms of perception (roles that were played, person feelings)? Finally, are there different ways the game could be utilized to reach the same goals? Or how might it be used to reach different goals?

At this point there is time for "conceptualization," or a clarification of what has been learned up to then. First, the ideas that have been discussed are put in order by the participants, in terms of which are most important and why. Then, they are expanded upon, if necessary. That is, a question may arise as to the actual legal requirements for the formation of a cooperative, or a question concerning correct spelling, or one about mathematics. The animador acts as a resource, clarifying these points.

They are then discussed in terms of their practical application. Taking the list of topics that have emerged during that session, the animador initiates a discussion of each, this time focusing on a comparison with the daily lives of the participants. For example, if the lawyer in the Hacienda game played a significant role, it is compared with the lived experiences of the group: is that how lawyers are? Are there good lawyers and bad ones? etc. If the topic is one of correct spelling, (e.g., springing from one of the literacy games), the discussion would begin with people describing how and where they use their writing skills, and if correct spelling really is important.

From there, generalizations are made about the experience of the game and those of real life: why such a situation exists. This is the true "reflective" step in the process; participants are asked to go beyond what is seen and felt to an analysis of the forces (structures, habits, people)

that cause those situations. Thus, one's daily experience becomes subjective and not absolute; because the causes can be identified, action can be planned.

The proposed action begins with a discussion of how the participants would like to see these situations changed and, more concretely, the steps they might take to bring about that change. The educational games are brought back under discussion by returning to the objectives that had been set before play and those that had been met, and applying what had specifically been learned to the desired changes being talked about. That is, "of what practical application are the things we've learned here?"

The action being discussed is formalized by having the group set objectives and goals for itself, centering on the ideas that came out in the game. If it was a cooperative, for example, the goal would be to find out more about how one is organized and run. It might be one of literacy, in which case a goal would be set to practice their skills more often. It is important that the goals be attainable; at first glance they might appear absurdly simple, but at this stage it is engaging in the process (identifying problem areas, reducing them to manageable components, and setting goals for their resolution) that is as important as the result.

4. Planning the next session.

Each game session is quite unique, despite the general outline followed at all of them; topics that come out of the game will vary from one week to the next, as will the experiences brought by the participants. The animador must take that into consideration when planning a session, but he is by no means left without guideposts or "bridges." The experience of each session offers subjects for the next: problems in utilization of the games, learning objectives that were set but not met, activity goals agreed upon by the participants. They serve to link one session with the next, building on what has gone before rather than seeing the games as isolated incidents. The planning is, then, a joint process, reflecting the "possession" by the participants and the facilitating role of the animador. The former set the tone and objective, and the latter helps to structure them into concrete actions.

FIELD SUPERVISION AND QUALITY CONTROL

The essential element in even the most well-conceived of plans is the extent to which a system of monitoring and self correction are present. Project staff was mindful of this from the very beginning and initiated systematic procedures for field supervision of staff and attempted to maintain and improve the quality of instruments utilized based upon field experiences.

Field Supervision

The actual field coordination began after the first week of activities in the selected communities. Each field worker was visited individually. Given the short time available in each community, the coordinator would follow a rather set format for the visit:

1. informal conversation with the field worker to discuss procedural or personal problems, concerns, etc. Each would be worked out within the limitations of the evaluation design.

2. review of work diaries, field notes, and other evaluation instruments. They would be checked with the animador for completeness and depth.

3. help with the data gathering--application of the tests, filling in demographic information, informal and structured contacts with community leaders and participants.

4. planning the animador's activities. This included the preparation of the written design for each game session as well as the activities (introduction to communities, test-taking, flow of information to the project office) to be accomplished in the succeeding weeks.

5. assistance with and supervision of the game sessions. In aiding the animador with the participant groups (which often exceeded 30 to 40), the coordinator was able to become more familiar with the reality of each community, alter procedure if necessary to meet new developments, and assess the quality of game use by each animador.

6. review of procedures. This was the last step in each visit, done on an as-needed basis; the coordinator would go over with the field worker those procedures that, through her observation, needed cor-

rection or reinforcement, suggesting ways to improve their work.

7. reinforcement and communication. Through the visits, the coordinator also acted as a very personal link between the abstract goals of the evaluation and the very immediate, personal experiences of the field workers. Often alone in the isolated communities, the animador needed the reassurance and support that Srta. Núñez, the coordinator, could bring, as well as the reminder that their work was important and that they weren't alone or forgotten. Between the team meetings, her visits served as communications link between animadores, relating common problems, bits of news, greetings, etc.

The coordination effort, as originally designed, was of comparatively limited scope; we envisioned one person--the coordinator--to travel between four days and two weeks at a time, visiting each field worker once every two or three weeks. The rest of her time would be spent in collating the information gathered and organizing it in the Quito office.

As time went on, however, we found important reasons for expanding that scope:

1. logistics. The areas in which each animador worked were widely separated, as were many of the communities within each area. The project had no access to a car or jeep, depending entirely on public transportation or a good pair of boots; this proved to be enormously inefficient, time-consuming, and ultimately impossible as a means of covering all the communities. One person, even if travelling constantly and doing nothing else, could not hope to adequately meet the needs of the coordination design.

2. depth and scope of the site visits. Responsible for the complete, accurate completion of all the evaluation procedures, the coordinator would have to spend, as a barest of minimums, one day with each field worker; an adequate visit would be for two days. When multiplied by five field workers--and then again by the two to four communities in which each animador worked--the sheer quantity of the work became overwhelming.

3. field worker personnel. We found that several of the animadores were having tremendous personal and/or technical difficulties in carrying out the assignments--often lonely and frustrated. In the first few months they required concentrated attention. It was a heavy personal investment, made at the cost of assistance to the other members of the team, but with the hope that it would result in a strengthened person and, hence, an improved performance.

Nevertheless in a few cases we had to terminate the service of inadequate field workers.

It was the issue that forced the project staff to step back and seriously question the coordination effort. Was it necessary? How much of it, which facets of it, were most important? Was it physically possible?

We were unanimous in concluding that it was necessary--in fact, indispensable. We also agreed that every aspect of the coordination as it had been outlined prior to the field work was also necessary; nevertheless, we ordered those points, according to the priority in terms of the evaluation's needs and, secondarily, in terms of the needs of the particular field workers. Finally, we concluded that it was physically impossible--for one person. Therefore, the project's field administrator, Peter White, would take on part of the coordination work, following the same procedures as the Ecuadorian coordinator.

This decision raised the question of "communication": could a North American (Mr. White) take on this role vis-a-vis an Ecuadorian team working in small rural Ecuadorian villages? And what effect would it have on local people? The answer, as it turned out, was a qualified "yes." It was explored with each of the field workers in terms of the communities in which they were working. Where a problem might arise, the field supervision would be left to Srta. Nuñez exclusively. Familiarity with the instruments, a good command of Spanish, and increasing familiarity with the project communities were sufficient to overcome the doubts about Mr. White's impact on the local participant groups. Under the circumstances it was the best solution possible, and it did serve to maintain the high standards of the coordination effort at the same time it allowed for that effort to cover all the evaluation project's many facets.

The key to the effectiveness of the supervision/coordination was planning--"coordination of the coordination." The progress of each animador in each community was charted in the project office, as were the reports and impressions brought back by Srta. Nuñez and Mr. White. This helped us keep track of the project as a whole and also served to make the site visits:

1. increasingly personalized. Specific problems or needs could be dealt with on an individual basis. There were, of course, problems common to all the animadores but which were manifested in different ways; aware of them beforehand, aware of things that were coming up in each community (game sessions, application of tests, etc.) visits could be planned to coincide with these needs.

2. sequential. We were able to assess the work of the field workers over time and on a community-by-community basis. Visits would then be progressive rather than repetitive. They would be scheduled not according to a rigid calendar, but according to necessity (or lack of it).

The field supervision, then, had two major functions:

1. to ensure the quality of the data collection, and

2. to continually balance the essential needs of the evaluation and the reality of rural communities.

In both functions the coordination proved to be not only vitally important but very successful as well.

Quality Control of the Demographic Profile.

The instrument was reviewed point by point with the field team before work in the communities actually began and again after the first week of field work. Questions were raised concerning the scope of some of the data requested and the possible errors because of inaccurate information available from local leaders. These were discussed, and strategies were set for the interpretation of widely varying responses to the same questions in certain communities.

Individual field supervision was also employed; additional contacts, interviews, and observations by the supervisory staff helped to clarify some data and expand on others.

The original investigation design called for the demographic profile to be completed prior to the introduction of the educational materials in order to get a picture of the community prior to intervention. Because some of the important data were either unobtainable or unreliable after only a week's presence in the community, the game sessions went ahead on schedule while the profile would be filled in as more accurate data could be determined. Likewise, the instrument's second application (immediately upon completion of UCLA intervention) was often delayed for the same reasons. In all cases, however, the information recorded was adjusted (if necessary) to conform to the status of the community immediately prior to UCLA intervention and immediately after the project there was completed.

There were instances where the information was not obtained because the regular sources were highly unreliable and greatly at variance with each other; these items were, regrettably, left blank rather than filled in with possibly misleading guesswork.

Quality Control of the Individual Instrument Application

When the field work began in late September, 1974, we were confident that uniformity had been achieved concerning the use and interpretation of the pre-test instrument. Because rural investigation can be fraught with unforeseen problems, two mechanisms were devised whereby the standardization of application could be maintained: individual field supervision and periodic group sessions with the entire team.

The first group session was held in Quito after one week of in-community field work, with no supervisory control during that time. Each worker was asked to describe in detail his or her method of applying the instrument and, item by item, identify difficulties encountered (i.e., problems with interpretation of certain words).

Among the many processes to be followed by the field workers--introduction of self and project into the communities, individual interviews, game sessions, work diaries--we agreed that the accuracy and reliability of the interviews were of primary importance. This, then, was the focus of the individual field co-ordination during the second week in the communities.

One aspect of this was direct supervision: observing the field workers as they applied the instrument, gauging their style, attitude, and response vis-a-vis the interviewee. Observations, criticisms, suggestions, and encouragement were made where applicable, always in a private, relaxed setting. Another aspect was by example: The supervisor(s) would apply the instrument personally, with the field worker observing. This allowed the supervisor to experience the vagaries and difficulties as well.

The pre-test remained at the top of our "priority list" throughout October and into the first part of November. A second group meeting was held at the end of October. Each and every questionnaire that had been completed to that time was reviewed by field worker and supervisor, correcting errors, filling in missing demographic data, and again emphasizing the importance of uniformity in its application until agreement was reached on how to deal with them.

The instrument application was again reviewed at the subsequent group meetings (in December and February), and in all field visits by the two supervisors right to the end of the project.

Quality Control of the Non-Formal Game Implementation.

The use of the UMass educational games requires two basic skills: physical manipulation (implying familiarity with the game itself, an ability to explain it to others, and flexibility in its use according to a particular learning group), and secondly, ability to utilize the game in its larger, reflection-producing context (to be able to pick up on ideas, conduct discussions in a productive, non-manipulative manner, and help others reach logical conclusions).

Given the ambitious objectives of the games and the evaluation's intention to measure them accurately, both of the required skills are equally fundamental. In the three-week training session for field workers in September, 1974, the training in actual use of the materials was left to UMass personnel, who conducted short sessions with each game. The UCLA evaluation consultants, already familiar with the game, reinforced those sessions and at the same time, they began to concentrate on a second, more difficult skill.

The theoretical aspects of the "learning circle" (concrete experience --> reflection --> conceptualization --> practical application) were discussed at length with the field team, emphasizing their importance in the context of the evaluation. They were then applied to the non-formal games in an intensive, several-days practice, with each worker alternating in the role of animador and the others acting as participants. The other field workers then acted as supervisors, along with the trainers--pointing out shortcomings, steps skipped, possible alterations, strategies for dealing with unforeseen problems in the course of a real session.

The importance of standardization in procedure was made clear, as were the great differences in content that would be encountered in each community.

Subsequent training sessions for new field workers followed the same format, but with UCLA consultants and staff in charge of all aspects of training. The later sessions were strengthened by our field experiences, from which we had learned that both physical manipulation and discussion leading were indeed equal factors in the success of the games.

Ensuring skilled game utilization required two quality control strategies: direct field supervision and observation, and periodic group meetings at which the field workers could share problems, frustrations, or successful tactics. With respect to the supervisory staff (Mr. White, Srta. Pilar Núñez), the diversity of experiences during the first month of field activity put a severe strain on them. Each learning group was unique, and the outlined procedures for game sessions were often being greatly modified by the animadores in an effort to deal with immediate problems (e.g., groups that didn't express themselves and others that talked about everything but

the game; lateness of night sessions that meant cutting short the reflection period; initial restlessness that cut short the "learning community" step, etc.). The supervisors, however, would review each session in the context of the particular community, emphasizing that the steps could be followed (indeed must be followed) while allowing for individual diversity in each group. This was reinforced at the team meeting at the end of October, when all the steps were again exhaustively reviewed and put into practice through simulations amongst the field workers.

1. As the project progressed, the problems encountered in game utilization were reduced to certain steps within the overall process and to certain field workers.

2. The physical manipulation of the game was rarely a problem; rather, we were dealing with deficiencies in the step whereby the game experience could be transferred to daily situations.

3. These were the cases that then received more supervision, with frequent field site visits and detailed review of the problem areas.

4. Since absolute standardization of styles and abilities was never contemplated, the differences that appeared were controlled for by detailed documentation on a community-by-community basis.

A secondary control mechanism was the constant review of the field diaries as they were turned in to the office. They were scrutinized for both breadth and depth; if questions arose, they would be reviewed with the field worker during the next site visit.

In this way, a close touch was maintained with the processes being followed in each community. Familiarity with the field workers and the impact communities themselves allowed the supervision to be flexible and at the same time, it maintained the outlined standards for game utilization.

Quality Control of Work Diary

The outline of the complete work diary was put together during the September field worker training session, keeping in mind in the needs of evaluation as such (i.e., massive, detailed, reliable information on all aspects of the field implementation) and the physical possibilities of obtaining such information, given the many demands on the animadores' time. Major emphasis (reflected in the amount of detail requested) was on the implementation of the non-formal materials, followed by observations on the community and the animadores' reactions to it.

The diary was discussed at length with the field staff; it was made clear that in an investigation such as this, the careful documentation of the steps followed and results observed are as important as the steps and results themselves. At the team meeting in Quito following the first week of work in the communities, the diaries of each animador were reviewed and discussed, as were the problems encountered in obtaining information and strategies for sharpening one's vision. The diaries tended to say too much --down to descriptions of breakfast and scenery along the way--or too little; the need for focus was obvious.

In the following weeks, as direct field supervision was stepped up, the field workers could discuss immediate impressions with the supervisors and thus gradually adjust their wide-vision experiences to the more narrow needs of the evaluation. Another result of the supervision was to see the need for structuring the physical side of the information gathering. The separate forms for game sessions and introduction to the community were developed to pull together these notes into a complete, understandable picture of each step.

There was, naturally enough, a great variety of observational styles, field experience, and writing skills brought to the evaluation by our five to seven member staff; this variety could never be eliminated or standardized--indeed, it was a key variable in our evaluation of the materials--but rather controlled for through rather rigid formats for the reporting of information, close field supervision, and constant interchange of impressions between the field staff and the supervisors.

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